

FLIGHT

First Aero Weekly in the World.

Founder and Editor: STANLEY SPOONER.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

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Flight.

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EDITORIAL COMMENT.

The Work of the R.F.C.

Since the commencement of the war, now and again, some of the many really splendid achievements of officers in the Royal Flying Corps have been allowed to be generally known, many of these, by mere force of merit, having asserted themselves, even in the face of military reticence. There have been well-earned distinctions conferred, which have helped to emphasise the remarkable ascendancy which aviation has gained for itself as a vital unit in modern military operations. That every flying officer in the Service needs only the opportunity to prove his ability to overcome difficulties is but an axiom, and from the welcome recognition by the Commander-in-Chief of the wholehearted and intelligent co-operation of the warrant and non-commissioned officers, enormous encouragement is given to earn for the Flying Service an *esprit de corps* ranking with that of the oldest and most honoured regiments in the King's Army. Already in *Flight* in past months we have had the pleasure of recording the various honours to members of the R.F.C., and this week the already long list is added to by the appointment of Captain Borton, of the Black Watch, and

Captain Marshall, of the 28th Light Cavalry, Indian Army, both attached to the R.F.C., to be Companions of the D.S.O. for their services with the Expeditionary Force. The particular incident on June 7th attaching to the appointment, which is set out in the official announcement appearing elsewhere, will be recalled by our readers, and is one that is worthy to rank with the best of other outstanding feats of devotion which have in their turn been recorded and rewarded.

In addition, last week were issued the details of the work which had called forth the award of the Distinguished Conduct Medal to nine Warrant and N.C.Os. of the Royal Flying Corps, as previously published in a recent issue of *Flight*. In the cases of Sergeant R. H. Carr and Sergeant E. R. C. Scholefield it may be noted that each has been promoted to Second Lieutenants in the Special Reserve. We do not doubt but that practically every man in the R.F.C. would be as conspicuous in his efforts, under such conditions as now prevail, as occasion may be vouchsafed him.

We offer our most sincere congratulations to each and every one of the officers and the non-commissioned officers now and in the past selected for honour. We fear, however, if there is anything in the oft-repeated appeals which have been made, to smother all mention of any gallant deed performed by those who are fighting for our hearths and homes, by reason of its being derogatory to the *amour propre* of the Army, that it is only right that we should bracket our humble apologies with our congratulations. The most astonishing thing of all perhaps is that the authorities that be, who must be well acquainted with this great objection to any mention of deeds of exceptional character, should so persistently continue to insult the individual members of our Forces by advising the King to confer special honours upon them, considering the impossibility, under their condition of enrolment, of being able to hit back. However, we have every hope of being forgiven by those whom it has been seen fit to decorate, in view of the fact that, in our judgment, our readers and the British nation generally take a less prejudiced view of such distinction, and are even glad to be able to rejoice with each other that they have the knowledge that so many such good men exist. Whilst in no way admiring or advocating hysterical gush, there is a very grave danger that by complete suppression of every reference to deeds of valour—so far as individual identification is concerned—the incentive to emulate such deeds of daring may be lost to many men who have in them also the making of heroes.

In fact we make bold to suggest that we are not alone in asking to be able to join in doing honour to such men of distinction. There is a degree of modesty which, if persisted in, amounts to the worst form of vanity, and although it may be the ideal in peace times for some more or less ornamental heads of regiments to deprecate forcing into publicity the doings of any particular officer, in war times, such as we are at present experiencing, in our view, there is every reason for the contrary to be encouraged, so long as due distinction is drawn between highly-coloured descriptions of minor feats and outstanding deeds of courage which should be coupled with the names of those responsible, for time without end. Indeed no forcing is required. The nation is only too ready to acknowledge spontaneously true worth. Again and again have protests been issued at the suppression of the names of those accomplishing these great achievements, and by way of emphasising this view, the following letter sent to the Press last week by Lt.-Col. Dudley Sampson should carry some weight in favour of accepting the principle of giving credit where credit is due. It is inconceivable that the suppression of names in such cases as that referred to can possibly be justified by reason of not desiring to give the enemy useful information. What help, in the name of everything reasonable, could the publication of the names possibly afford. Yet, in the face of official routine apparently, Col. Sampson may not supply the missing names from "Eye-witness" narrative. Col. Sampson writes:—

"Sir,—In the papers of June 29th there is an account from 'Eye-witness' of a splendid deed. Two officers of the Royal Flying Corps—a pilot and an observer—tackled and beat a huge German 'Two Tail,' but their own aircraft caught fire and they had to descend to earth in a blaze of flame, wounded and burnt, but undaunted. For what possible reason have the names of these two splendid fellows been suppressed? It is inconceivable! I happen to know who they are and where they are, but surely the public should know also.

"Yours, &c.,

"DUDLEY SAMPSON, Lieutenant-Colonel.

"Burshalls, Lindfield, Hayward's Heath."

Aircraft versus Submarines.

The first authenticated attack by an aeroplane upon a submarine falls to be recorded this week, it being contained in the following official Italian Admiralty *communiqué* issued from Rome on July 2nd:—

"In the Adriatic Sea yesterday a French airman, Sub-Lieut. Rouillet, dropped from a height of 50 ft. two bombs on the Austrian submarine U 11.

"The bombs exploded under the water very close to the turret, apparently with success."

From subsequent information, *via* Geneva, there would appear to be some doubt as to the submarine being destroyed, as she has been reported to have been towed to Trieste in a damaged condition with four of her crew dead. This, however, does not nullify the fact that the bombs launched from the aeroplane effectually reached their mark, a fact which carries with it much encouragement for the use of aircraft as an antidote to underwater



French Aerial Guard for Venice.

FROM its Venice correspondent, the ECHO DE PARIS learns that "Venice is at present protected by a squadron of seaplanes manned by French naval pilots under the command of Naval Lieutenant Conneau ('Beaumont'). The measures for the protection of the city are such that since May 28 no enemy aeroplane has attempted to fly over Venice.

Every day the French pilots fly over the Gulf of Trieste and

craft, as advocated in *Flight* many months ago. We may hope, therefore, in the days to come, when the British Flying Services have enough craft to go round and a few to spare, that sight will not be lost of so promising a method of utilising any surplus units. There is much to be done in this direction, we are confident.



Air-Raid Insurance.

From questions answered in Parliament this week, the scheme for National Insurance against aircraft raids appears to be getting nearer to fruition, as on Tuesday Mr. Lloyd George definitely stated that the matter was being pressed forward as rapidly as possible, by the Board of Trade and the Treasury working together, whilst the Prime Minister hoped to be at a very early date in a position to make a statement upon the subject. No doubt there must be many sides and issues to consider, but it is to be hoped much more delay will not be experienced, as it is getting appreciably nearer "Zeppelin time" just now, and there are not a few who would be glad to know they were covered against any loss arising from the merest whim of fortune in directing one of the raiders in some particular direction. In the meantime, it is evident that pressure has been brought by Germany upon the Dutch authorities to stop as far as possible any information leaking out through telegraphic messages as to the passage of airships in this or that direction, thereby endangering the neutral attitude of our Dutch friends, which all points to possible activity of the German airfleet.

A side issue, last week, in connection with these promised raids, raises the query whether the remedy of erecting anti-raid wire nets upon the roofs of buildings is not worse than the stray chances of the disease. In the case of the North British Assurance Company in Threadneedle Street, a framework of rolled steel joists has been erected to support 7½ tons of steel wire netting. They were consequently haled before the magistrate at Guildhall under the Building Act, for carrying out the work without giving the necessary notice to the district surveyor, and mulcted in a nominal penalty of 5s. and costs. But that there is reason in having such constructions approved and supervised officially may be gathered from a statement by the surveyor to the effect that if a bomb exploded on the network, the joists, acting as levers, would bring down the chimney, to which they were attached, and some 20 tons of stone and brickwork would fall into the street below. It is surprising to what lengths some institutions will go in carrying out elaborate precautions of this character against such a comparatively small chance of its ever being required. But then every concern has not the vast accumulations and premiums, based upon very generous estimates, which the big insurance houses have at their backs to draw upon. What is the more astonishing is that, being such pastmasters in the art of accepting risks themselves, they should not appreciate how slight an individual risk exists in regard to damage from the air.



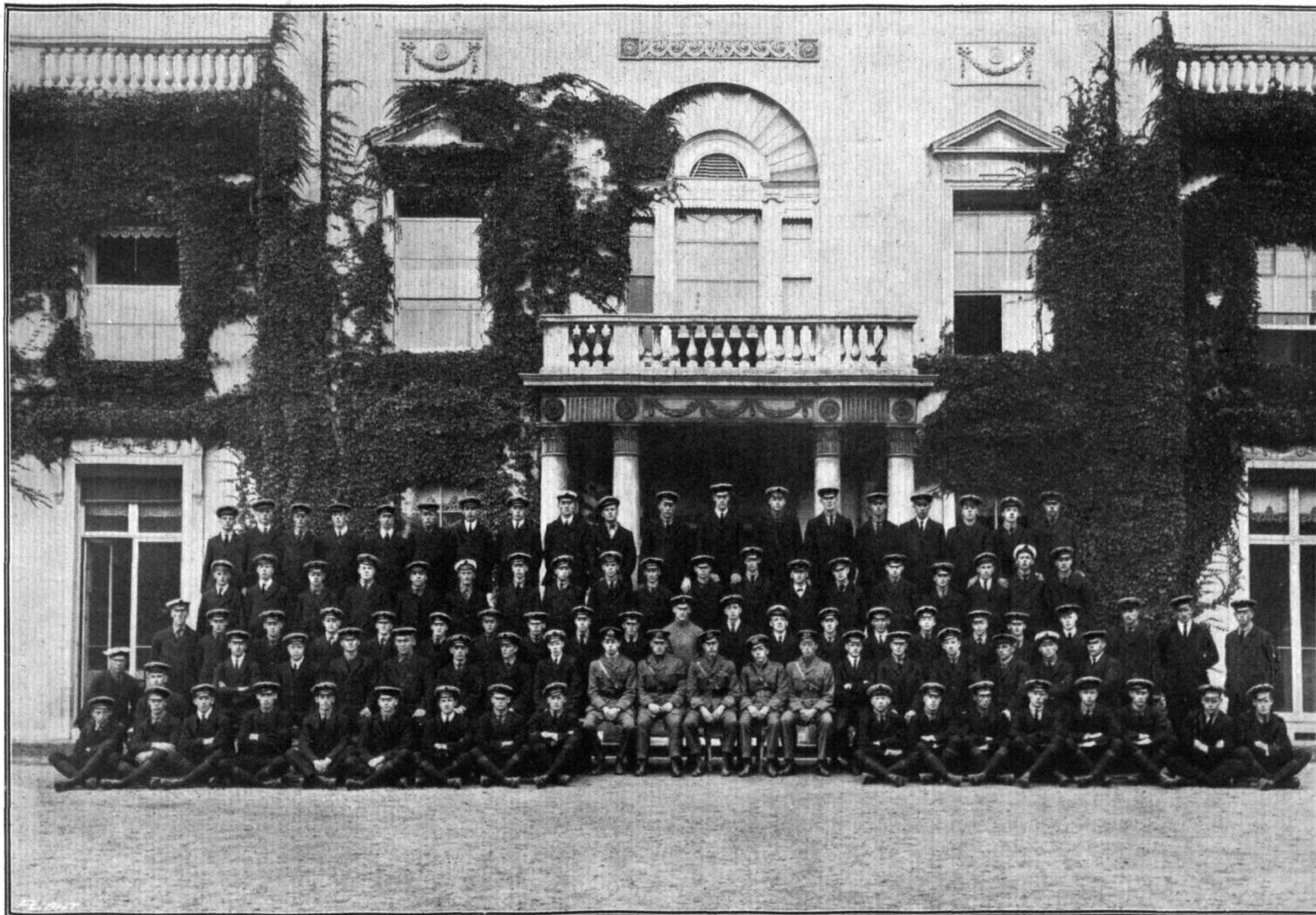
reconnoitre the positions and movements of the Austrian ships. On the 6th inst. the Austrian lighthouse at Salvore was bombarded by the airman Rouillet."

Austria Orders Zeppelins.

ACCORDING to a report from Amsterdam the Austrian Government has placed an order for three Zeppelins, intended for use against Italy, to be built at the Zeppelin works at Friedrichshafen.

JULY 9, 1915.

FLIGHT



Copyright, F. N. Birkett, from the F.N.B. Series of Aviators.
Officers and men of No. 4 Kite-Balloon Section at Roehampton, now "somewhere" at the front.

AIRCRAFT WORK AT THE FRONT.

OFFICIAL INFORMATION.

THE following statement was issued by the Admiralty on Monday night :—

"A German official *communiqué* issued on Sunday stated that German aircraft had dropped bombs on Landguard Fort at Harwich: the following are the facts concerning this incident, otherwise hardly worth notice :—

"On Saturday forenoon a German seaplane and aeroplane appeared off Harwich flying very high. Our aircraft immediately started in pursuit and drove them off.

"The hostile aircraft then dropped their bombs into the sea and made their escape, still flying at a great height."

It was officially announced in Pretoria on July 1st, that two British aeroplanes successfully bombed the enemy's troops and trains at Otavi on June 29th.

In the *communiqué* issued in Paris on Saturday afternoon there was the following :—

"Our aeroplanes successfully bombarded the stations of Challerange, Zarren and Langemarck as well as the German batteries at Vimi and Beaurains."

In an official *communiqué*, regarding the operations in the Dardanelles, issued in Paris on Wednesday, there was the following :—

"Enemy aeroplanes several times bombarded our lines.

"At the end of the day (July 5th) fifteen Allied aeroplanes flew over the Turkish aerodrome at Chanak. They threw several bombs, and a large shell struck the principal shed."

In the *communiqué* from the General Staff, issued in Rome on July 1st, it was stated :—

"Hostile airmen continue their activity, making victims also among the civilian population.

"Our airmen effectively bombarded a column of troops and supply wagons near Appachiasella, and also the railway station at San Daniel."

The following statement was issued by the Italian Naval Staff in Rome on the 2nd inst. :—

"In the Adriatic yesterday a French airman, Sub-Lieutenant Rouillet, dropped two bombs from a height of 50 ft. on the Austrian submarine U 11.

"The bombs exploded under the water very close to the turret, apparently with success."

The following note was issued by the Naval Staff on July 4th :—

"This morning an Austrian seaplane appeared over Alberoni.

"Being subjected to artillery fire from our anti-aircraft guns and chased by French and Italian aeroplanes, it made off rapidly towards the east, dropping a few bombs on the way, which fell harmlessly into the sea."

In a note issued by the Naval General Staff on the 5th inst., it was stated that an Italian airship bombarded and seriously damaged the Stabilimento Tecnico at Trieste last night. The airship returned home safely.

In a despatch from the Army Headquarters issued in Rome on July 5th there was the following :—

"Last night our dirigibles bombarded effectively enemy encampments in the environs of Doberdo and the Dornberg-Prvacina Railway Junction, damaging the line and the station of Prvacina. Our airships, which were cannonaded by anti-aircraft guns, returned safely."

WAR HONOURS.

D.S.O. for Captain Borton and Captain Marshall.

It was officially announced on Saturday evening that the undermentioned officers have been appointed Companions of the Distinguished Service Order in recognition of their gallantry and devotion to duty whilst serving with the Expeditionary Force :—

Captain Amyas Eden Borton, The Black Watch (Royal Highlanders), attached Royal Flying Corps.

Captain Anthony Marshall, 28th Light Cavalry, Indian Army, attached Royal Flying Corps.

When on flying reconnaissance over the neighbourhood of Staden on June 7th, 1915, Captain Borton was wounded in the head and neck by a bullet fired from a hostile aeroplane, and although suffering severely from loss of blood he contrived, with the assistance of the observer, Captain Marshall, to bandage his wounds and completed the reconnaissance on the prescribed course. His injuries are such that he is not yet out of danger.

Captain Marshall continued his observations after rendering all possible aid to the pilot, who was gradually losing consciousness, notwithstanding that the German aeroplane was persistently attacking. The valuable report supplied by this officer is as detailed and complete for the last as it is for the first part of the reconnaissance.

The Gallant Deeds which Won D.C.Ms.

In a supplement to the LONDON GAZETTE, issued on Friday, were set out the deeds of the nine warrant and non-commissioned officers of the Royal Flying Corps upon whom the King has been graciously pleased to award the Distinguished Conduct Medal, as recorded in a recent issue of *Flight* :—

Sergeant R. H. Carr, Royal Flying Corps (now Second Lieutenant, Special Reserve).

For the conspicuous gallantry and ability with which he has carried out the duties of a pilot.

Corporal W. Dobbie, Royal Flying Corps.

For gallant conduct and coolness when carrying out his duties under fire; also for the conspicuous thoroughness and efficiency for which his work has been noticeable.

1st Class Air-Mechanic W. Harper, Royal Flying Corps.

For gallant conduct and coolness when carrying out his duties under fire; also for the conspicuous thoroughness and efficiency for which his work has been noticeable.

Flight-Sergeant W. C. Hayward, Royal Flying Corps.

For conspicuous zeal, devotion to duty, and the noticeably efficient manner in which he has carried out his responsible duties.

Flight-Sergeant T. Hughes, Royal Flying Corps.

For conspicuous zeal and devotion to duty, and the noticeably efficient manner in which he has carried out his responsible duties.

Corporal H. Jameson, Royal Flying Corps.

For conspicuous coolness and gallantry on several occasions in connection with wireless work under fire.

1st Class Air-Mechanic L. S. Newns, Royal Flying Corps.

For gallant conduct and coolness when carrying out his duties under fire; also for the conspicuous thoroughness and efficiency for which his work has been noticeable.

Corporal R. E. P. Paynter, Royal Flying Corps.

For gallant conduct and coolness when carrying out his duties under fire; also for the conspicuous thoroughness and efficiency for which his work has been noticeable.

Sergeant E. R. C. Scholefield, (now Second Lieutenant in Special Reserve of Officers), Royal Flying Corps.

For the conspicuous gallantry and ability with which he has carried out the duties of a pilot.

Flight-Sergeant T. G. G. Tindale, Royal Flying Corps.

For conspicuous zeal and devotion to duty, and the noticeably efficient manner in which he has carried out his responsible duties.

THE BRITISH AIR SERVICES.

Royal Naval Air Service.

THE following appeared among the Admiralty announcements of the 2nd inst. :—

Temporary Lieut.-Commander (R.N.V.R.) O. Locker-Lampson, M.P., granted rank of temporary Acting-Commander (R.N.V.R.), with seniority of July 3rd, and re-appointed to "President," additional, for R.N.A.S.

Acting Sub-Lieut. (R.N.R.) W. Man, transferred to R.N.A.S. as Probationary Flight Sub-Lieutenant, for temporary service, with seniority of June 30th, and appointed to "President," additional, for R.N.A.S.

A. T. Moore and T. H. Brinsmead, both entered as Probationary Flight Sub-Lieutenants, for temporary service, with seniority of June 25th and July 11th respectively; both appointed to "President," additional, for R.N.A.S.

Temporary commissions have been granted to the following :—W. P. Prentice, as Lieutenant (R.N.V.R.), with seniority of July 1st, and H. E. Parker, as Sub-Lieutenant (R.N.V.R.), with seniority of June 24th, and both appointed to "President," additional, for R.N.A.S.

The following appeared among the Admiralty announcements of the 3rd inst. :—

Temporary Sub-Lieut. Viscount Tiverton, promoted to temporary Lieutenant (R.N.V.R.), with seniority of July 1st.

W. M. Lange, granted temporary commission as Lieutenant (R.N.V.R.), with seniority of June 28th.

C. Lightfoot, granted temporary commission as Sub-Lieutenant (R.N.V.R.), with seniority of July 2nd.

The following appeared among the Admiralty announcements of the 5th inst. :—

Temporary Lieut. (R.N.V.R.) E. Willis to "President," additional, for R.N.A.S. July 3rd.

The undermentioned have been entered as Probationary Flight Sub-Lieutenants, with seniority as follows: H. R. C. Dewes, June 29th; J. A. G. Swaine, July 3rd; H. L'E. Tyndale-Biscoe, A. D. W. Allen, W. T. S. Williams, C. W. Elliott, and J. A. Sadler, July 11th; and R. S. W. Dickinson, July 12th, all appointed to "President," additional, for R.N.A.S.

Temporary commissions have been granted as follows:

Lieutenants (R.N.V.R.): B. E. J. Petre, with seniority of June 28th; M. J. Astle, with seniority of June 30th; W. L. Adams, A. R. Fenn, and T. G. Hull, with seniority of July 3rd, all appointed to "President," for R.N.A.S.

Sub-Lieutenants (R.N.V.R.): N. W. Bancroft, with seniority of July 3rd, and appointed to "President," additional, for R.N.A.S. (Armoured Cars); and J. P. Bourke, with seniority of July 4th, and appointed to "President," additional, for R.N.A.S.

The following appeared among the Admiralty announcements of the 6th inst. :—

The undermentioned entered as Probationary Flight Sub-Lieutenants for temporary service, to date as mentioned: A. Geddes, June 30th; R. Adkins, July 2nd; and W. Davies and A. Gammon, July 11th.

P. Browne granted temporary commission as Lieutenant, R.N.V.R. To date July 5th.

W. Smiles granted temporary commission as Sub-Lieutenant, R.N.V.R. To date July 5th.

Warrant Officer 2nd grade temporary: G. Sykes granted temporary commission as Lieutenant, R.N.V.R. To date July 5th.

Roll of Honour.

THE following casualties have been officially announced by the Secretary of the Admiralty :—

Under date June 4th :

Slightly Wounded.

Lieutenant-Commander Charles Lister, R.N.V.R., Armoured Cars.

Under date June 28th from the Dardanelles :

Slightly Wounded.

Acting Lieutenant-Commander Reginald B. B. Colmore, R.N., Armoured Cars.

Lieutenant Frank H. M. Savile, R.N.V.R., Armoured Cars.

Lieutenant Percy M. Woodland, R.N.V.R., Armoured Cars.

Sub-Lieutenant Rene J. M. de St. Ledger, R.N.V.R., Armoured Cars.

Under date June 30th :

Killed.

Flight Sub-Lieutenant Preston A. Watson.

Royal Flying Corps (Military Wing).

The following appeared in the LONDON GAZETTE of the 29th ult. :—

Wing Adjutant.—Brevet Maj. Evelyn B. Gordon, the Northumberland Fusiliers, vice Capt. A. B. Burdett, York and Lancaster Regt., who resumes his appointment as a Flight-Commander, April 28th, 1915.

Supplementary to Regular Corps.—Second Lieutenants (temp. Captains) to be Lieutenants, and to retain their temp. rank: April 24th, 1915: Francis C. Jenkins, Percy R. Grace, Alfred Huggins, Richard H. Collier.

Second Lieutenants to be Lieutenants: April 24th, 1915: Arthur Payze, John C. Joubert de la Ferte, Edward K. Davies, Geoffrey H. Eastwood, Joseph J. Hammond, Oswald Mansell-Moullin. June 30th, 1915: Gerald C. R. Mumby, Tom V. Smith, Robert B. Bourdillon, Robert Orme, Frank Jolly, John E. Storey, Harold T. Musker, Louis F. R. Fell, Geoffrey C. Gold, Friederick L. Scholte, Albert E. Snape, Harold Burchall, Thomas E. Robertson, Charles P. Ogden, John W. Griffith, Arthur M. Cott, Sydney H. B. Harris, Alexander G. Clark, Lionel M. Bennett.

Gardiner G. Hubbard to be Second-Lieutenant (on probation): June 11th, 1915.

The following appeared in a supplement to the LONDON GAZETTE issued on the 1st inst. :—

Flight Commander.—Lieut. C. H. Marks, Reserve of Officers, from a Flying Officer, and to be temporary Captain whilst so employed; June 19th, 1915.

Assistant Equipment Officer.—Sec. Lieut. Achibald M. Low, Special Reserve; June 18th, 1915.

The following appeared in the LONDON GAZETTE of the 2nd inst. :—

Flying Officer.—Lieut. D. L. Allen, Princess Victoria's (Royal Irish Fusiliers), from an Assistant Equipment Officer. June 1st, 1915, but with precedence from Jan. 15th, 1913.

The following appeared in a supplement to the LONDON GAZETTE issued on the 3rd inst. :—

Flying Officers.—Sec. Lieut. N. J. Bengough, Fife and Forfar Yeomanry, T.F.; Sec. Lieut. J. Guy, S.R.; Sec. Lieut. C. J. Chabot, S.R.

The following appeared in a supplement to the LONDON GAZETTE issued on the 5th inst. :—

Supplementary to Regular Corps.—The appointment of Second Lieutenant (on probation) James D. Dinneen is cancelled, June 19th, 1915.

The following appeared in the LONDON GAZETTE of the 6th inst. :—

Squadron-Commander.—Capt. Edgar R. Ludlow-Hewitt, Royal Irish Rifles, from a Flight-Commander, and to be temporary Major whilst so employed. June 24th, 1915.

Flying Officer.—Capt. Bindon Blood, 4th (Queen's Own) Hussars, and to be seconded. June 10th, 1915.

To the Reserve.—Capt. Claud A. G. L. H. Farie, Highland L.I., from a Flight-Commander. June 6th, 1915.

Supplementary to Regular Corps.—Second Lieutenants (on probation) confirmed in their rank: Alan M. Morison, George L. P. Henderson, and Howard L. Cooper.

To be Second Lieutenants (on probation): Charles T. Cleaver; June 21st, 1915. Francis A. G. Noel; July 1st, 1915. Frank Tedman; July 5th, 1915.

Undated from Belgium :

Wounded.

Gunner T. Haslett, R.M.A. Anti-Aircraft Brigade.

The following casualties in the Expeditionary Force have been reported from General Headquarters :—

Under date June 23rd :

Wounded.

Captain J. N. S. Stott, 5th Dragoon Guards, attached R.F.C.

Under date June 29th :

Killed.

Second Lieutenant J. C. H. Barfield, Royal Flying Corps.

Undated :

Wounded.

Captain E. F. Unwin, A.S.C. and R.F.C.

Captain A. Marshall, 28th Cavalry (Indian Forces), attached R.F.C.

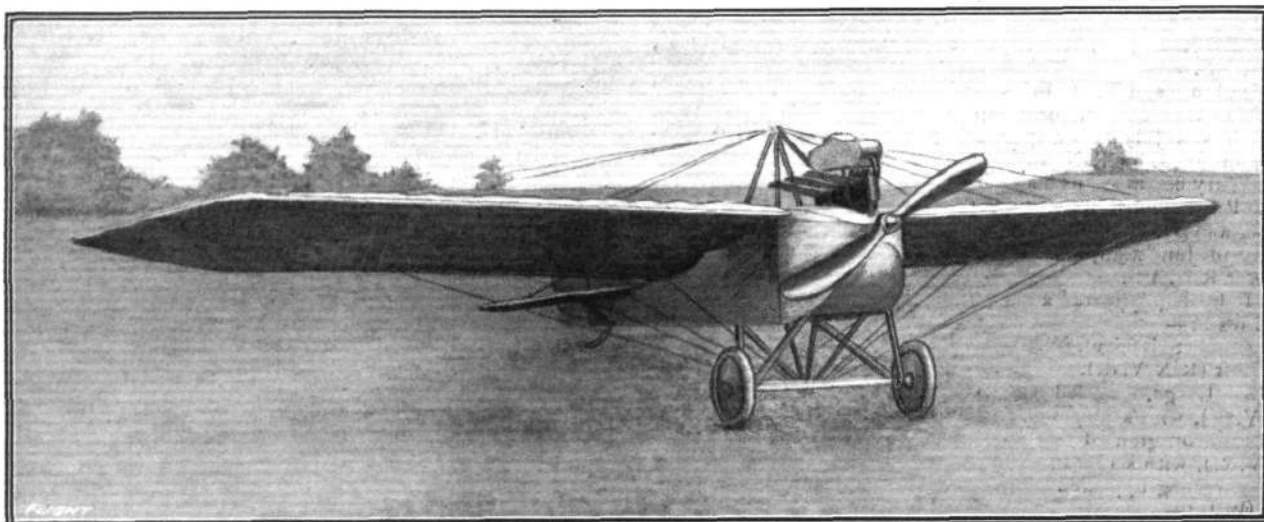
Died.

3515 2nd Class Air-Mechanic J. W. Simpson, Royal Flying Corps.

THE RUMPLER-TAUBE MONOPLANE.

ALTHOUGH at the present time the Germans are not using the Taube type of monoplane so much as at the commencement of hostilities, they have not entirely abandoned them, and in fact efforts are being made to bring them more into line with other types of monoplane

operate in an upward direction only, so that a downward reaction is presented on the side of the higher wing. Cable bracing is employed top and bottom, the cables in each case being anchored to pyramids of tubular steel struts mounted above and below the body respectively;

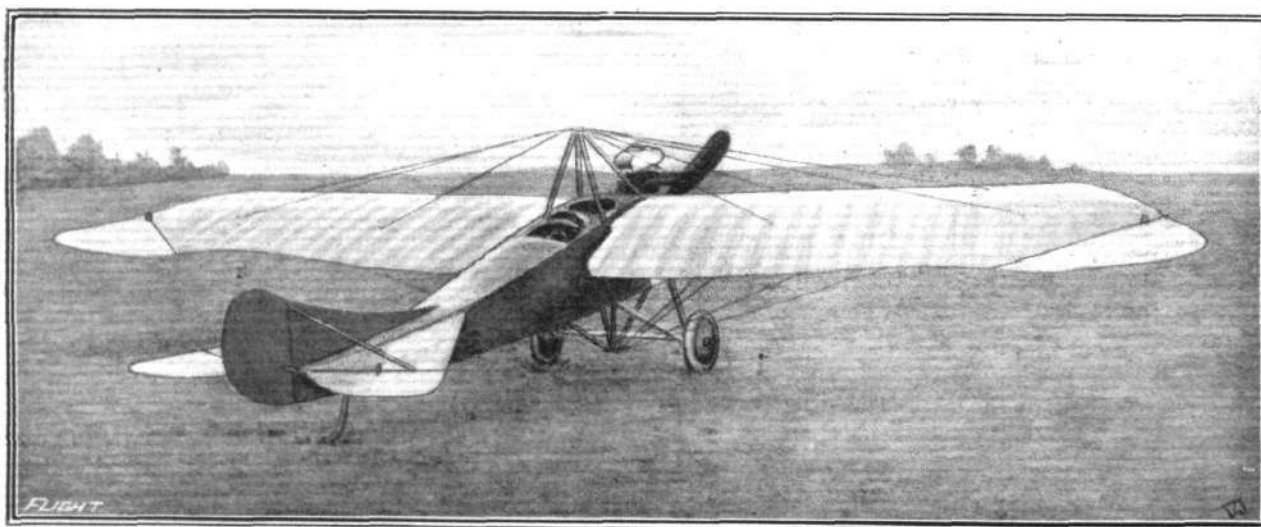


Three-quarter view, from the front, of the Rumpler-Taube monoplane.

as regards speed. This is especially noticeable in the case of the Rumpler-Taube, which is described in the following notes.

Viewed from this standpoint, the prominent features of the Rumpler-Taube will be seen to consist in the absence of the girder understructure bracing the wings—a distinctive characteristic of nearly all Taubes—the hinged balancing flaps, and the orthodox type of tail planes in place of the original flexing plane. Though somewhat modified, the main planes still have the Zanolia form, and in addition they are very slightly swept back. The angle of incidence decreases towards the tips, where the balancing flaps present a slight negative angle of inci-

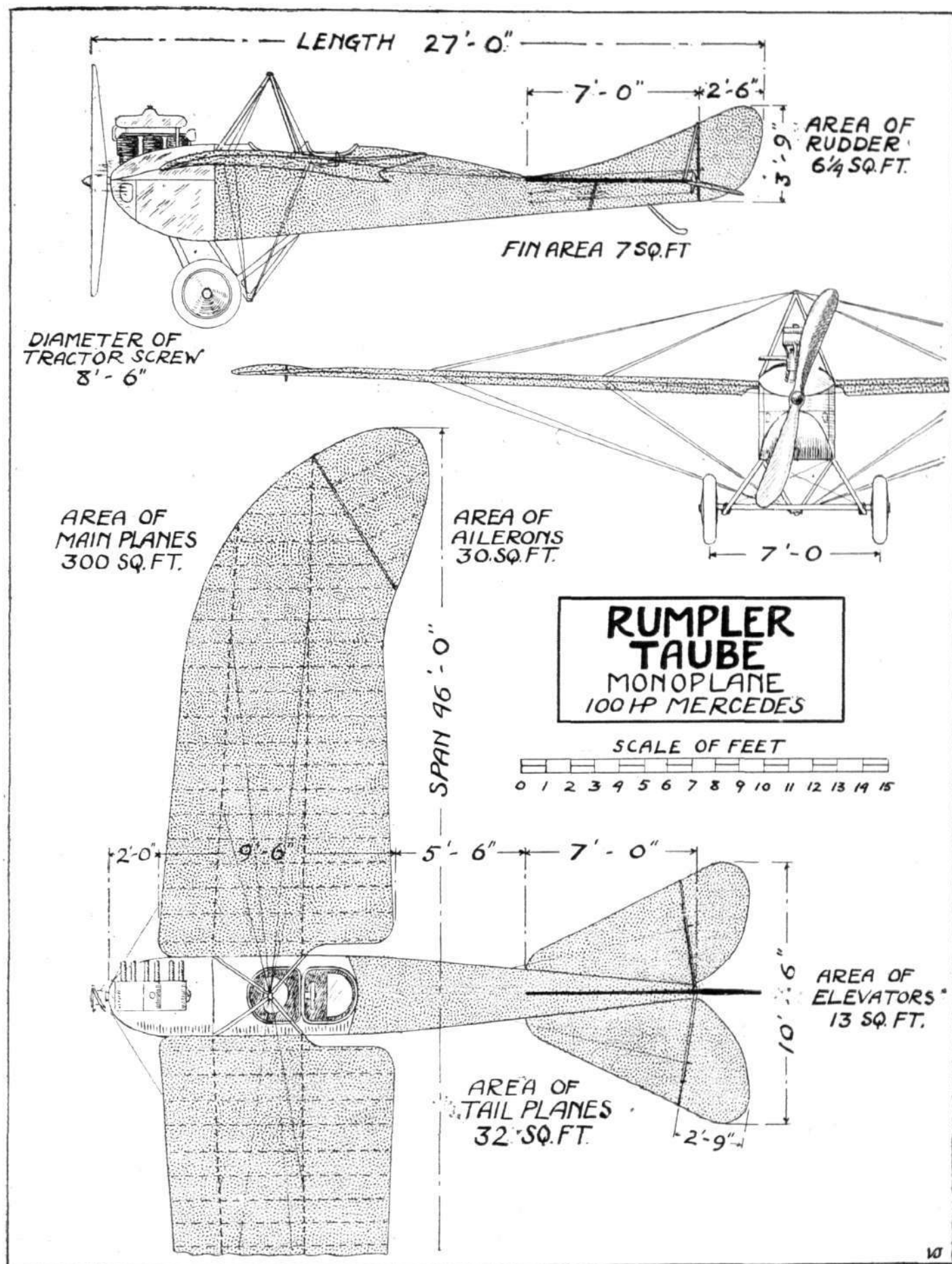
the underbracing is thus quite independent of the undercarriage, and should the latter become strained the adjustment of the planes is not disturbed. Ash and American white pine are employed in the construction of the main planes, which are built up on two main spars situated fairly close together. Portions of the planes adjacent to the pilot's cockpit are cut away in order to provide a view below. The tail consists of a triangular stabilizing surface, in two portions mounted one on either side of the body, and two elevator flaps hinged similarly to the balancing flaps, *i.e.*, at an angle. The vertical rudder is mounted between the elevators with a triangular vertical fin in front.



Three-quarter view, from behind, of the Rumpler-Taube monoplane.

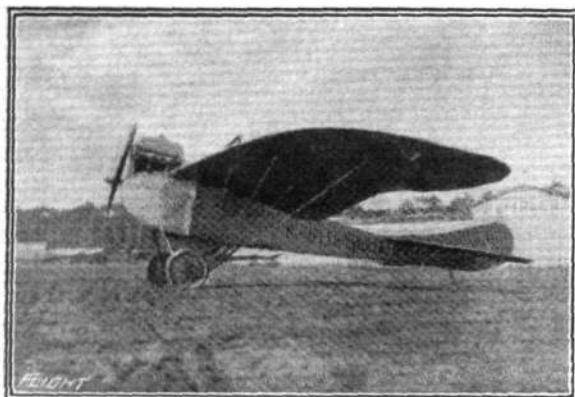
dence. An interesting point in connection with these balancing flaps, which have an area of 15 sq. ft. each, is that they are hinged along an axis forming an angle with the transverse axis of the main planes. They also

The body is rectangular in section, tapering to a vertical knife-edge at the rear. Ash is the material employed in its construction, and the portion forward of the cockpits is covered with sheet metal, and that aft



THE RUMPLER-TAUBE MONOPLANE—Plan, side and front elevations to scale.

with fabric. The engine, a 100 h.p. 16-cylinder water cooled Mercedes, is mounted in the nose, with the



Side view of the Rumpler-Taube.

Windhoff radiator directly above it. This radiator is made up of aluminium tubes, and being mounted

immediately above the engine, the water in the jackets is always under pressure, thus preventing air locks or vapour pockets. The engine drives direct a Reschke tractor screw 8 ft. 6 ins. diameter and 4 ft. 9 ins. pitch. Immediately behind the engine are the fuel tanks, and then come the pilot's and passenger's cockpits, the pilot being seated behind the passenger. The control consists of a vertical wheel mounted on a rocking column, the former operating the balancing flaps and the latter the elevator, whilst the rudder is actuated by pedals. A simple but strong under carriage is fitted consisting of two pairs of steel V struts of streamline section, with a tubular axle carrying a pair of disc wheels, attached, by means of rubber bands, to the apex of each V. A short skid attached to the body at the rear protects the tail.

The following are the main characteristics of the Rumpler-Taube:—Span, 46 ft.; maximum chord, 9 ft. 6 ins.; overall length, 27 ft.; supporting area, 300 sq. ft.; weight fully loaded, 1,840 lbs.; speed, 74 m.p.h.; climbing speed, 2,600 ft. in 6 mins. (full load, 4 hours fuel and 400 lbs. useful load).

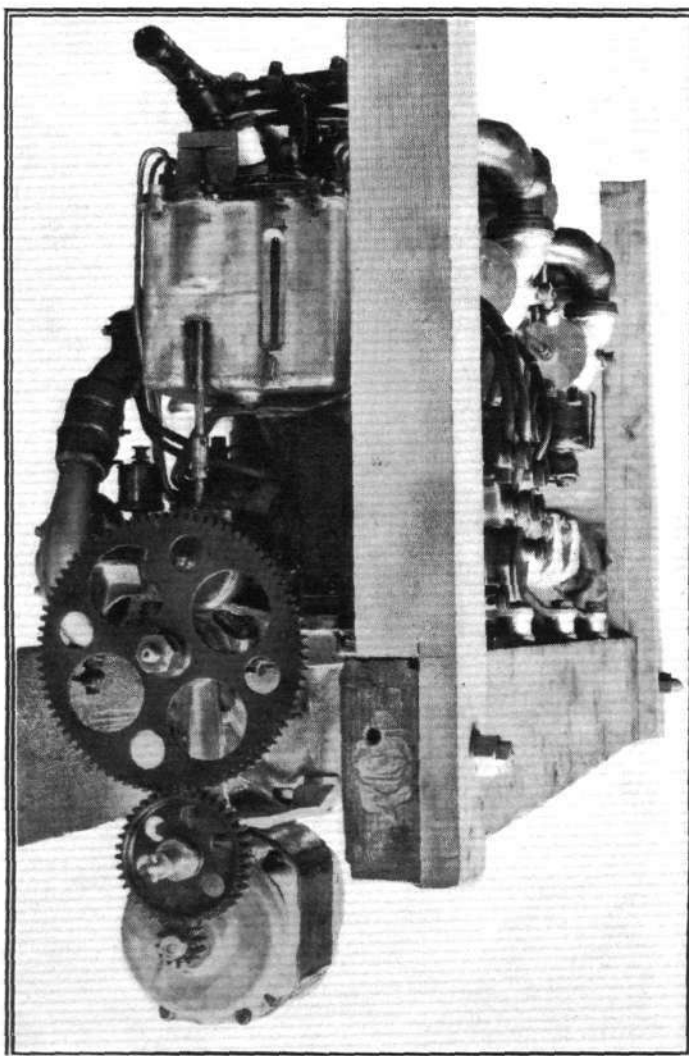


AN INTERESTING ENGINE STARTER—THE C.A.V.

THERE was a time, and not so very long ago, when the comparatively low-powered engines employed in aeroplanes did not present very urgent need for self-starting devices, the "swinging" of the propeller being generally considered the most expedient way of starting, at any rate as far as land-going machines were concerned. In the case of seaplanes the problem was somewhat different. Owing to the practical impossibility of starting the engine by the usual method while the machine was at rest on the sea, and as in these earlier days the extra weight of the floats was usually such as to leave little margin for fitting "gadgets" that would do the "swinging," a starting handle operated from the seat of the pilot or passenger was generally the only means for getting the engine going without leaving one's seat. As the horse-power of the engines increased the operation of starting by means of a handle became more and more difficult, until at the present day, where the tendency is towards larger and higher powered machines, some other means has become an absolute necessity, not only for seaplanes, but for land-going machines.

Generally speaking, three systems of starting may be said to come into consideration, *i.e.*, dual ignition, which, of course, presupposes the existence of an explosive charge in the cylinders, the compressed air starter, and the electric starter. To the last-mentioned class belongs the device produced by Messrs. C. A. Vandervell and Co., of Acton, the well-known electrical specialists, whose starters and lighting sets are so well known in connection with their use on motor cars. To adapt the starter for use on an aeroplane naturally presented considerable difficulties, as the weight of the arrangement, including battery, gears and fittings, had to be limited to 84 lbs. However, in spite of this handicap, a device has been completed and tested which, we are told, fulfills all requirements. Its capabilities have been put to very severe tests, including start from cold and turning over a 90 h.p. Beardmore engine, on which the trials were made, at 50 r.p.m. for a period of two minutes. The h.p. developed by the starter was 1'2, and with a specially constructed 12-volt. battery, if fully charged and used intermittently, about 30 starts can be made.

As regards the general arrangement of the system, it may be stated that this follows closely the principle of those which have proved so successful in motor car work, *i.e.*, an electric motor supported on brackets from the crank case and driving the engine through spur gearing, including a large wheel mounted on the rear end of the crank shaft, a small wheel on the electric motor and an intermediate idle wheel. For use on a larger aircraft, where the extra weight would not be a serious drawback, it would be a simple matter to add to the equipment a small dynamo driven by the engine, thus furnishing the current for charging the battery and, in addition, capable of providing the current for a headlight for use when landing in the dark and for illuminating the instrument board.



The C.A.V. electric starter fitted to a Beardmore engine.



More Rewards for Zeppelin Hunters.

MR. WM. BOW, of the well-known shipbuilding firm of Paisley has offered £500 for the aviator who first brings down a Zeppelin

on British soil, and Hon. Col. Joseph Cowen, of Stella Hall, Blaydon-on-Tyne, will give £500 to the crew of the first aircraft to bring down a Zeppelin in the British Islands or the surrounding territorial waters.

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

SPECIAL COMMITTEE MEETING.

A SPECIAL MEETING of The Committee was held on Tuesday, the 6th inst., when there were present: Prof. A. K. Huntington, in the Chair, Mr. Griffith Brewer, Mr. Ernest C. Bucknall, and the Assistant Secretary.

Election of Members.—The following New Members were elected:—

Charles A. Davenport.
Harold James Dawson.
2nd Lieut. Lewis Edward Brown Greaves, R.F.C.
Flight Sub-Lieut. Humphrey de Verd Leigh, R.N.A.S.
Beardmore Stewart.

Aviators' Certificates.—The granting of Aviators' Certificates Nos. 1322-1358 was confirmed.

The granting of the following Aviators' Certificates was confirmed:—

- 1359 Flight Sub-Lieut. Arnold Hugh Sandwell, R.N.A.S. (Caudron Biplane, Royal Naval Flying School, Eastbourne). June 16th, 1915.
1360 2nd Lieut. Herbert Charles Coperlestone Thurgood (North Staffordshire Regt.) (Maurice Farman Biplane, Military School, South Farnborough). June 17th, 1915.
1361 Flight Sub-Lieut. Geoffrey Richard Henry Talbot, R.N.A.S. (Maurice Farman Biplane, Royal Naval Air Station, Chingford). June 27th, 1915.
1362 Flight Sub-Lieut. Bertram Charles Bell, R.N.A.S. (Caudron Biplane, Ruffy-Baumann School, Hendon). June 28th, 1915.
1363 Flight Sub-Lieut. Charles Cyril Rogers Edwards, R.N.A.S. (Maurice Farman Biplane, Royal Naval Air Station, Chingford). June 29th, 1915.
1364 Lieut. Franklyn Bellamy (Durham Light Infantry) (Maurice Farman Biplane, Military School, Ruislip). June 30th, 1915.
1365 Charles William Snook (Hall Biplane, Hall School, Hendon). June 30th, 1915.

American Certificate.

Thomas James Dean (Curtiss Biplane, North Island, San Diego). June 3rd, 1915.

French Certificate.

2108 Prince Aram d'Abro (Maurice Farman Biplane, Farman School, Etampes). June 25th, 1915.

The following Aviators' Certificates were granted:—

- 1366 Flight Sub-Lieut. William Arthur Kirkpatrick Dalzell, R.N.A.S. (Caudron Biplane, Royal Naval Air Station, Eastbourne). June 2nd, 1915.
1367 2nd Lieut. Clifford James Temperley (Northern Cyclist Battalion), (Maurice Farman Biplane, Military School, Farnborough). June 2nd, 1915.
1368 Flight Sub-Lieut. John Clifford Croft, R.N.A.S. (Caudron Biplane, Royal Naval Air Station, Eastbourne). June 10th, 1915.
1369 Flight Sub-Lieut. Victor Nicholson, R.N.A.S. (Maurice Farman Biplane, Central Flying School, Upavon). June 11th, 1915.
1370 Lieut. Samuel Maxwell Laurent Greer, R.F.A. (Maurice Farman Biplane, Military School, Shoreham). June 26th, 1915.
1371 Flight Sub-Lieut. Leopold Howard Wilkinson, R.N.A.S. (Short Biplane, Royal Naval Air Station, Eastchurch). June 29th, 1915.
1372 Flight Sub-Lieut. Charles Langston Scott, R.N.A.S. (Short Biplane, Royal Naval Air Station, Eastchurch). June 29th, 1915.
1373 Lieut. Malcolm Henderson (4th Seaforth Highlanders) (Maurice Farman Biplane, Military School, Ruislip). June 29th, 1915.
1374 Lieut. Lee Kynaston Murray, R.F.A. (Maurice Farman Biplane, Military School, Farnborough). June 30th, 1915.
1375 Lieut. Reginald Stuart Maxwell (East Yorkshire Regt.) (Maurice Farman Biplane, Military School, Farnborough). June 30th, 1915.
1376 Flight Sub-Lieut. Malcolm Hood, R.N.A.S. (Grahame-White Biplane, Grahame-White School, Hendon). June 30th, 1915.

- 1377 Mervyn Minter (L. and P. Biplane, London and Provincial School, Hendon). June 30th, 1915.
1378 2nd Lieut. I. T. Lloyd (South Wales Borderers) (Maurice Farman Biplane, British Flying School, Le Crotoy, France). July 1st, 1915.
1379 Flight Sub-Lieut. Bruno Philip Henry de Roeper, R.N.A.S. (Grahame-White Biplane, Grahame-White School, Hendon). July 1st, 1915.
1380 Trevor Dudley Cole (Caudron Biplane, Ruffy-Baumann School, Hendon). July 1st, 1915.
1381 Flight Sub-Lieut. Forster Herbert Martin Maynard, R.N.A.S. (Short Biplane, Royal Naval Air Station, Eastchurch). July 1st, 1915.
1382 2nd Lieut. Wilfrid Theodore Blake (Oxford and Bucks L.I.) (Maurice Farman Biplane, Military School, Ruislip). July 1st, 1915.
1383 2nd Lieut. Albert Leslie Neale (Maurice Farman Biplane, Military School, Farnborough). July 1st, 1915.
1384 Flight Sub-Lieut. Taunton Elliott Viney, R.N.A.S. (Caudron Biplane, Royal Naval Air Station, Eastbourne). July 1st, 1915.
1385 Lieut. Robert Egerton (2nd Royal Irish Fusiliers) (Maurice Farman Biplane, Military School, Ruislip). July 2nd, 1915.
1386 Flight Sub-Lieut. Samuel Denys Felkin, R.N.A.S. (Caudron Biplane, Royal Naval Air Station, Eastbourne). July 3rd, 1915.
1387 Lieut. Gilbert Dennis James Grune (R.F.A., T.). (Maurice Farman Biplane, British Flying School, Le Crotoy, France). July 3rd, 1915.
1388 Capt. Bernard Torrington Monier-Williams (R.G.A.) (Maurice Farman Biplane, Military School, Shoreham). July 4th, 1915.
1389 Flight Sub-Lieut. Edmund Parfitt Hardman, R.N.A.S. (Grahame-White Biplane, Grahame-White School, Hendon). July 5th, 1915.
1390 Flight Sub-Lieut. Siegfried Rickards Watkins, R.N.A.S. (Grahame-White Biplane, Grahame-White School, Hendon). July 5th, 1915.

Fifth Anniversary of the Death of the late the Hon. C. S. Rolls.

July 12th will be the fifth anniversary of the death of the late the Hon. C. S. Rolls, who was killed in his Wright Biplane at the Aviation Meeting held at Bournemouth in 1910. The Hon. C. S. Rolls was one of the most renowned pioneers of aviation in this Country, and a special subscription list for the Flying Services Fund will be opened on that date in commemoration of the services which he rendered and as a testimony of the honour in which his memory is held.

Members wishing to subscribe should forward their remittances to the Royal Aero Club, 166, Piccadilly, London, W.

THE FLYING SERVICES FUND administered by THE ROYAL AERO CLUB.

THE Flying Services Fund has been instituted by the Royal Aero Club for the benefit of officers and men of the Royal Naval Air Service and the Royal Flying Corps who are incapacitated on active service, and for the widows and dependants of those who are killed.

The Fund is intended for the benefit of all ranks, but especially for petty officers, non-commissioned officers and men.

Forms of application for assistance can be obtained from the Royal Aero Club, 166, Piccadilly, London, W.

Subscriptions.		£	s.	d.
Total subscriptions received to June 30th, 1915		9,270	14	11
Employés of Messrs. Ruston, Proctor, and Co., Ltd.		4	0	0

Total, July 7th, 1915... 9,274 14 11
166, Piccadilly, W. B. STEVENSON, Assistant Secretary.

FIVE YEARS AGO.

MONDAY next, July 12th, is the fifth anniversary of the lamentable death of the Hon. C. S. Rolls. It seems hardly possible that it is so long ago, so much has been accomplished in the world of aviation since that fateful date, when a telegram arrived from Bourne-mouth Aerodrome, at the office of FLIGHT, announcing the fatal accident to poor Rolls, which deprived aeronautics of one of the most valuable and promising practical supporters of the new art. The news came as a great shock to the thousands of his friends who had known Lord and Lady Llangattock's son through the years gone before, when, whilst still at Cambridge, Charlie Rolls had been one of the most prominent personages in the eye of the world by reason of his very energetic support of motorism. That was in the days when the red flag still held sway, and having accomplished so much in that industry, it was with great joy that it was presently learned that in like manner he was to be one of the earliest pioneers to join up in forwarding the cause of the heavier-than-air "cranks"—they *were* cranks in those days. Perhaps it was but natural that he should come into this field, as for years before his name was associated with ballooning, when aeroplanes were still but a dream of the theorists. From various quarters the suggestion has been put forward that it is a fitting time to perpetuate his memory by some form of memorial, and probably in normal times such a course would be taken up enthusiastically. But these are not normal times, and probably those who are desirous of giving support to such a proposal may find a very opportune outlet in this direction by subscribing generously to the very splendid "Flying Services Fund," of which Lord Kinnaid is the Hon. Treasurer, and which is under the auspices of the Royal Aero Club, 166, Piccadilly, and has the direct official support of both the British Flying Services. It would be a graceful method of paying a tribute to this British pioneer of aviation, and we do not doubt there would be little difficulty in combining all such subscriptions under the special heading of "In Memoriam C. S. Rolls." A double object by this means would be attained, and it

AN ANNIVERSARY.

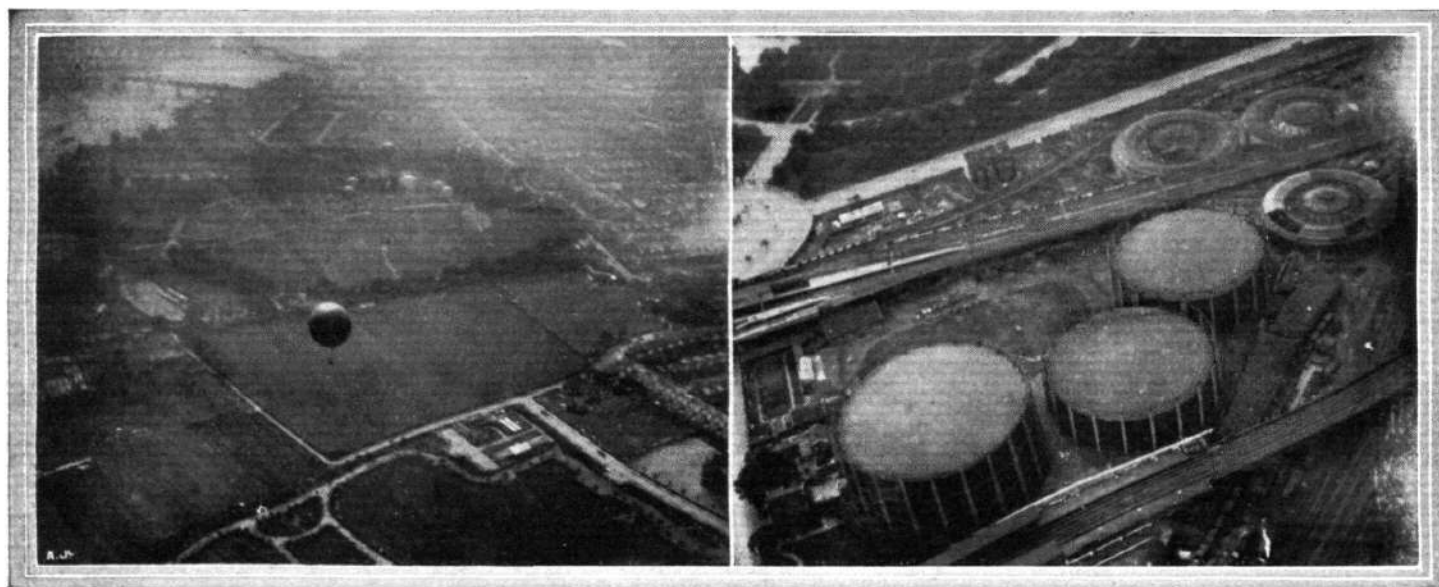
would be difficult to find any fund more worthy of support than this Flying Services Fund, having regard to the enormous value which the new art has been to this country in the present war. It is a fund established for the benefit of officers and men of the Royal Naval Air Service and the Royal Flying Corps who are



A REMINISCENCE OF THE LATE HON. C. S. ROLLS.—Another photograph by the late Hon. C. S. Rolls of the "Hare-and-Hounds" Race. In this the "Imp" is seen partially inflated at the finishing point, as a guide to the competitors, and on the ground can be seen the envelope of Mr. A. M. Singer's balloon, the "Satellite" (winner), deflated, showing how near Mr. Singer landed to the quarry.

incapacitated on active service and for the widows and dependents of those who are killed, and which is administered by a committee of which the Marquess of Tullibardine is chairman. It was for aviation Rolls sacrificed his life, whilst all his previous work may be summed up in one word—Progress.

As early as 1895, as an Undergraduate at Cambridge,



A REMINISCENCE OF THE LATE HON. C. S. ROLLS IN A "HARE-AND-HOUNDS" BALLOON RACE.—Two interesting photographs taken by the late Hon. C. S. Rolls when setting the pace in the "Imp" in "Hare-and-Hounds" Race from Hurlingham in the July previous to his death. On the left the "Hounds" are seen coming up behind, with Hurlingham in the distance; and on the right a birdseye view of Short's ballooning ground at the Battersea gasworks is seen, this latter picture giving an idea of the low altitude at which Mr. Rolls sailed over London.

he was driving a Peugeot car preceded with the archaic man with the red flag; he was the first motorist to drive the late King Edward, and was the winner of the Tourist Trophy, 1906. In the same year he was third in the first Gordon-Bennett Balloon Race.

In June, 1910, he flew from Dover to Calais and back in one continuous flight and was the first aviator to accomplish this feat.

With the co-operation of Mr. Claude Johnson and Mr. Royce, Rolls founded the famous Rolls-Royce firm, who are the makers of the world-famed car of that name, and he was one of the Founder Members, not only of the Royal Automobile Club, but also of the Royal Aero Club.

His foresight, pluck, enthusiasm and enterprise during

✕ ✕ ✕ ✕ FLYING AT HENDON.

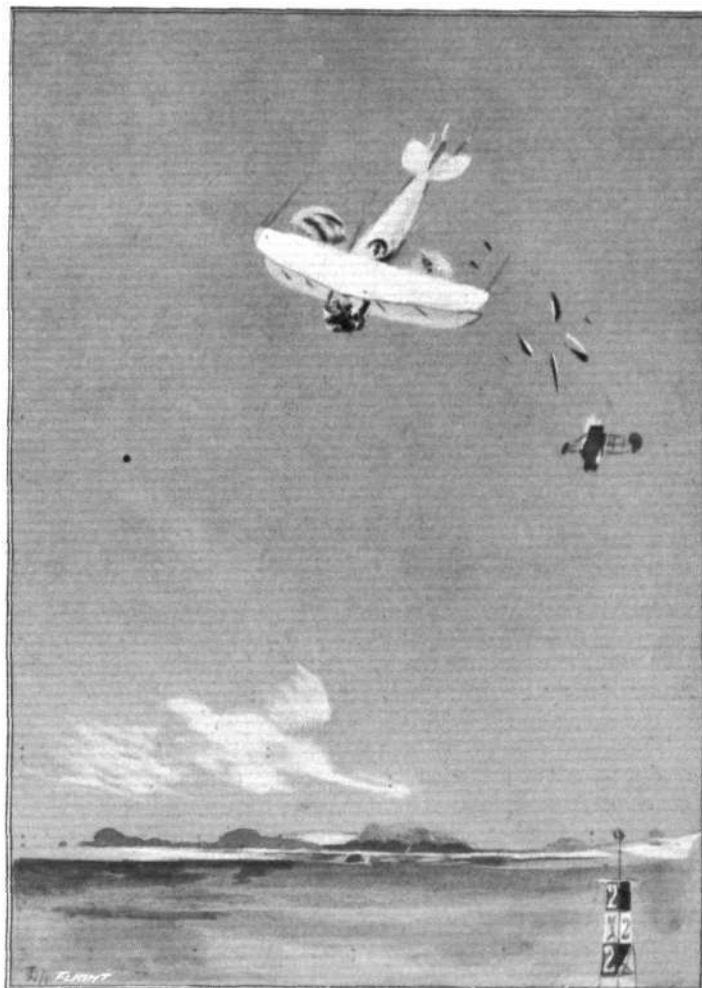
THIS last week-end at Hendon saw some very good flying that was, however, not without an exciting incident or two. Of special interest was the re-appearance of the Mann twin-propeller biplane, now fitted with a 125 h.p. Anzani engine. The first flight in its altered condition was made on Tuesday of last week, when W. Rowland Ding took it up for a short trial. It was soon found that the propellers were unsuitable, several minor adjustments also being required, as it did not prove so fast as with the 100 h.p. engine. The necessary adjustments were completed by Saturday afternoon, and in the evening Ding took it up once more just as rain commenced to fall. Improvement was at once discernible by the way it got off and climbed, and after several circuits an altitude of 1,500 ft. was reached. At this height Ding executed some banked turns, and descending a few hundred feet indulged in some switchbacks to show the machine was under perfect control. This time the speed had been increased to 70 m.p.h. As the rain was getting somewhat unpleasant, Ding decided to descend, and proceeded to come down, in over the hangars. Needless to say, both Mr. Mann and Mr. Grimmer were "all smiles," but at the last moment these smiles faded, for just as Ding was entering the aerodrome a fledgeling, on one of the numerous machines of a type that has become very popular, was taxiing right across in front of the descending machine. It was one of those moments when it was hard to tell whether or not the machine in front would pass by before the other landed. However, it was soon evident that a collision was there in the making, unless Ding could hop over the machine on the ground, for it was then too late to turn. Would the engine, which was well throttled down, pick up quickly enough? Being an Anzani, it naturally did the right thing, and all concerned were relieved to see the Mann 'bus shoot upwards, missing the other machine by a few feet only. Ding continued on his way, and eventually effected a safe landing.

The flying previous to this commenced at about 3 o'clock, and continued without interruption until well into the evening. As usual, the proceedings were opened with two flights each by M. Osipenko on the 50 h.p. G.-W. school 'bus and J. H. Moore on his 45 h.p. L. and P. biplane. This latter machine now comes out so regularly that Hendon has christened it "Old Moore's Almanac." Marcus D. Manton and E. Baumann got going next on the 50 h.p. G.-W. 'bus and the 50 h.p. Ruffy-Baumann biplane respectively. Then followed two passenger flights by Moore on the L. and P. and one each by Osipenko and Manton on the G.-W.

even so short a life, to say nothing of his untimely end caused by his devotion to a movement which at this time is destined to exert so portentous an influence on the result of this World War, stand out as a shining example and inspiration to the youth of all time, as showing that no matter what may be their social position, their highest honour lies in devoting their best energies to the advancement of human progress and that an honourable commercial career is not incompatible with social position however exalted.

We hope, therefore, to see the suggested support of the Flying Services Fund take solid form at the hands of those who have expressed their desire to commemorate the date of Rolls' death in some particular way, as an appreciation of his memory.

M. G. Smiles next started off on the 35 h.p. L. and P. biplane, and circled round over the aerodrome until he reached an altitude of 5,000 ft., no small feat for a little machine of this type; he was aloft for about 40 mins. altogether. After this the machines went up thick and fast, with and without passengers, the pilots and machines being



An artist's impression of the incident to the Mann twin-propeller biplane at Hendon.

Manton, Osipenko and J. S. B. Winter on the 50 h.p. G.-W. 'bus, W. Roche-Kelly on the 50 h.p. Beatty-Wright, Moore on his L. and P., and Baumann on the 50 h.p. R.-B. On one occasion Manton and Moore very nearly entered into partnership in mid-air—just missed it

by a matter of a foot or so. A pretty sight was witnessed later in the afternoon, when six Government machines were seen over the aerodrome, into which they descended one after the other, coming to rest side by side immediately in front of the paddock enclosure. The machines, three 80 h.p. Caudrons, two 80 h.p. Avros, and a 70 h.p. B. E. 2 c., after resting for a short time returned home,



KEEPING COOL.—Mr. M. D. Manton was making passenger flights at Hendon in his shirt sleeves during the heat last Saturday.

and the aerodrome settled down to school work again, until rain and the trial flight of the Mann biplane, previously described, brought the proceedings to a close.

On Sunday afternoon most of the previous day's pilots and machines put in considerable air work. Manton, Osipenko and Winter were very busy with passengers on the 50 h.p. G.-W. school 'bus, the first-named pilot on one occasion making a very long flight with a passenger. W. Roche-Kelly and C. B. Prodger were out on the 50 h.p. and 60 h.p. Beatty-Wright biplanes respectively.



FROM THE BRITISH FLYING GROUNDS.

London Aerodrome, Collindale Avenue, Hendon.

Grahame-White School.—There has been considerable work during last week. All the following pupils are Probationary Flight Sub-Lieutenants:—

Monday, eights with instructor, Hood.

Tuesday, rolling with instructor: Hodge and Hume; straights with instructor: Clayton, Clifford, Douglas, Murray, Penley, Perham, Roach-Pierson, Sievking and Watkins; solo straights: Pearson; bi-rudder practice: De Roeper and Hardman; circuits and eights: Hood.

Wednesday, straights with instructor: Clifford, Hodges, Roach-Pierson, Sievking and Watkins; bi-rudder practice: Hardman; *brevet* test: Hood; took good ticket.

Thursday, straights with instructor: Clayton, Douglas, Hodges, Murray, Perham; bi-rudder practice: Watkins; *brevet*: De Roeper; very good ticket.

Saturday, rolling with instructor: Dallas; straights with instructor: Clayton, Clifford, Douglas, Hodges, Murray, Penley, Perham and Sievking; circuits: Hardman and Watkins.

Sunday, rolling with instructor: James; straights with

E. Baumann flew the 50 h.p. Ruffy-Baumann biplane, whilst J. L. Hall made a high trip on his 45 h.p. Caudron. The event of the day, however, was the flying of the Mann biplane. Since its trial the evening before different propellers had been fitted, and shortly before 4 o'clock Ding took it up for a test, reaching an altitude of 1,500 ft. Although the machine flew as well as ever, the propellers were found to be not so good as those previously used, and so the latter were re-installed. At 5.30 p.m., Ding was away again, this time a speed of 73 m.p.h. being obtained. Unfortunately the trial was brought to an abrupt conclusion in a somewhat exciting fashion. Ding, to show the comparative speed, flew alongside and overhauled a G.-W. 'bus opposite the paddock enclosure. He had no sooner passed the other machine, and was making a sharply banked turn by No. 2 pylon, when those who were watching him closely were alarmed to see some dark objects fall from his machine, hearing immediately after a metallic "tearing" report. For a moment the machine banked over still more, and it was seen that the right hand propeller was revolving at a very much increased speed, so that it was evident that the other propeller had broken. Then the machine began to get back to an even keel, the engine being simultaneously switched off, and a descent commenced. In coming down it was still necessary to steer to the left a little in order to clear the railway, and so on landing—on ground none too smooth—the machine still continued to turn until by the time it came to rest it faced in the opposite direction. It was a wonderful landing and "save" which drew forth well-merited and appreciative cheers from the spectators. An inspection of the biplane showed that one of the stay tubes supporting the left hand propeller had sheared close to the latter, so that it swing back into the propeller and smashed it. However, no other damage—except for torn fabric here and there—had resulted, and as soon as certain modifications suggested by the trials have been made the Mann biplane will be out again. Messrs. Mann and Grimmer, as well as Mr. Rowland Ding, are to be congratulated both on the good performance of the machine and the fortunate issue to this little episode.



instructor: Clayton, Clifford, Dallas, Douglas, Hume, Murray, Perham and Sievking; eights and circuits: Hardman and Watkins.

Instructors during week: Messrs. Manton, Russell and Winter.

Beatty School.—The following pupils were out during last week, accompanied by the instructors: Messrs. Bond (25 mins.), Boyle (28), Bush (10), Chalmers (85), Crossman (9), Delves (36), Eaton (55), FitzHerbert (5), Fox (22), Holland (70), Jones (36), Litton (5), Ross (60), Rutherford (9), Sampson (20), Theo (20), Tomlinson (25), Dickenson (60), Turner (30). The instructors were Messrs. G. W. Beatty, W. Roche-Kelly, C. B. Prodger and P. A. Johnston, the machines in use being Beatty-Wright dual control and single seater propeller biplanes and Caudron tractors. Mr. G. K. Blandy continued extra practice on a Caudron machine.

Exhibition flights were given on Thursday, Saturday and Sunday, and five passenger flights were taken.

Hall School.—The Hall Flying School reports another excellent week's work last week. The following pupils are especially showing progress: Messrs. Minot,

Furlong, Lieut. Raymond-Barker, Lieut. Grant, Mr. Gay and Gordon, and should be qualifying for their certificates in a few days. Mr. C. W. Snook, who came all the way from Australia to join the Hall Flying School, took a most excellent certificate on Thursday evening, landing with the greatest precision on the mark each time. The other pupils at the Hall Flying School are getting on quite well.

With Instructor H. F. Stevens: Doing circuits and figures of "8," Messrs. Snook (36 mins.), Furlong (34), Minot (30). With Instructors C. M. Hill and H. H. James: Lieut. Grant (55 mins.), Mr. Booker (63), Lieut. Phillpotts (49), Snowden (67), Lieut. Raymond-Barker (74), Mr. Yonge (32), Bell (37), Gay (38), Gordon (45), Hatchman (38), Lieut. Jowett (39), Mr. Russell (16), Mr. Hammer (28), Mitchell (14), Cownie (16), Bayley (16), Millbourne (28), Punnett (8), Wenner (18), Bangs (16), Wilkins (10).

Machines in use: Hall tractor biplanes. Instructors: Messrs. J. L. Hall, H. F. Stevens, C. M. Hill and H. H. James.

London and Provincial Aviation Co.—Pupils doing straight last week: Messrs. Dower, Wood, Pullinger, Wattine, Everidge, Adams, Jacques and Scott. Pupils doing rolling: Messrs. Gunner, Sykes, McOnie, Sargood and Moynihan.



Non-Commissioned Officers as Military Pilots.

MR. JOYNSON-HICKS last week asked the Under-Secretary of State for War whether he was aware that there are a number of non-commissioned officers and men in the Royal Flying Corps who would make admirable pilots, and whether he would reconsider his decision and utilise some of these men for flying purposes?

Mr. Tennant replied: I do not trace the decision alluded to in the question, but I may say that non-commissioned officers and men are now in some cases trained as pilots, and more will be so trained as occasion arises.

The Age Limit for Military Pilots.

MR. JOYNSON-HICKS also asked whether the limit of age to thirty is still a hard-and-fast rule in regard to commissions in the Royal Flying Corps; and whether, in view of the inevitable expansion of such corps, he would reconsider the raising of the age limit in exceptional cases.

Mr. Tennant: The rule is as stated in the question, and experience proves it to be a wise one. It is only in exceptional circumstances that it is departed from. There is an abundant supply of applicants of a suitable age.

Apprentices in the R.F.C.

COMMANDER BELLAIRS asked the Under-Secretary of State for War whether he would state the minimum age for the Royal Flying Corps; and whether he would consider the advisability of introducing the apprentice system on probation at an age corresponding to naval cadets in the Navy, adding those who make most progress to the available pilots?

Mr. Tennant: If the question alludes to pilots, all available instructors and instructional aeroplanes are employed in training pilots of full age, and nothing would be gained by taking apprentices. If the question alludes to mechanics, a proportion of boys aged fourteen are already enlisted in the Royal Flying Corps, and are eligible for training as pilots when they are fully trained as mechanics.

Boy Mechanics in the R.N.A.S.

By an Order approved by the King in Council on Tuesday, on the application of the Lords Commissioners of the Admiralty, the rating of boy mechanics has been established in the Royal Naval Air Service, with pay at the rate of one shilling a day.

Insurance Against Air Raid Damage.

REPLYING to questions in the House of Commons the other day, Mr. Lloyd George said the Prime Minister hoped to be in a position to make a statement with regard to the proposed scheme of national insurance against air raids on a very early date. He understood from the Chancellor of the Exchequer that it was being pressed forward as rapidly as possible. The scheme would be the joint work of the Board of Trade and the Treasury.

British Pilots Interned in Holland.

THE DAILY MAIL correspondent at Rotterdam on Sunday reported that two British airmen, A. G. E. R. Meakin and A. T. P.

Mr. Minter took excellent ticket last week. Machines in use: Three tractor biplanes.

Instructors: Messrs. W. D. Smiles, M. G. Smiles, W. T. Warren and James.

Ruffy-Baumann School.—In consequence of fairly good weather last week all pupils were able to practise practically *ad lib.*, and Lieut. Balfour, who has had exactly ten days' tuition, was enabled to pass for his *brevet* on the new Ruffy-Baumann biplane previous to leaving for the front, where he will be transferred to the R.F.C. Mr. T. Cole accomplished his *brevet* tests on the 50 h.p. Caudron-type biplane, and made a good *vol plane*. The following pupils were out on the 60 h.p. Ruffy-Baumann biplane: Dyson-Perrins (34 mins.), Wilson (10), Hudson (7), Gardner (20), Wallis (6), Mathewson (18), Ball (12). On the 50 h.p. Ruffy-Baumann biplane and the 50 h.p. Caudron-type biplane: Sykes (30 mins.), England-Derwin (32), Fenning (23), Wilson (8), May (20), Gardner (6), Wallis (6), Cole (25), Balfour (50).

Instructors: Edouard Baumann, Felix Ruffy, Gino Virgilio and Clarence Winchester.

Many passengers have been carried this week on the various machines, including several ladies, who have all enjoyed the experience. Among other passengers were several army officers.



Adams, were obliged to descend near Sas van Gent on the previous evening. Their machine was riddled with German bullets.

The men came down in a potato field, thinking they were in Belgium. They burned their machine. They have been interned.

Greece Honours the late Flight Lieut. Pizey, R.N.A.S.

FROM particulars which are now to hand it appears that the late Flight Lieut. Collins P. Pizey, R.N.A.S. (Commander Royal Greek Navy), died at Edipos, Island of Euboea, of dysentery. His body was taken to Athens on a man of war, and full naval honours accorded at the funeral, over 600 Greek sailors marching in the funeral procession. Among those present at the last rites were the King's private secretary, representing King Constantine, a representative for each member of the Royal family, the British and Serbian Ministers, and secretaries and attachés from the British, Italian and Russian Legations, Greek admirals and officers, all the members of the British Naval Mission to Greece (except Admiral Mark Kerr, M.V.O., R.N., absent through illness), the Minister of Marine, the Minister of Communications, and others. There were a large number of floral tributes, including wreaths from King Constantine, the Crown Prince of Greece, and the Aviation Corps.

Fatal Accident to Flight Sub-Lieutenant P. A. Watson.

WHILE flying near Cross-in-Hand, East Sussex, on the 30th ult., a machine piloted by Flight Sub-Lieut. P. A. Watson, R.N.A.S., suddenly dived from a great height to the ground, the pilot being instantly killed. Flight Sub-Lieutenant Watson will be remembered as the inventor of the rocking-wing aeroplane described in *Flight* of May 15th, 1914.

Fitters Needed by R.N.A.S.

EXPERIENCED fitters and turners are required for the Royal Naval Air Service. Pay is 4s. a day and all found. Applicants should attend at the R.N.A.S. Recruiting Office, Hendon, in the forenoon, and it will be necessary to produce birth certificate, references, and National Insurance card. Men engaged in Government work should not apply.

Holland and Zeppelin Warnings.

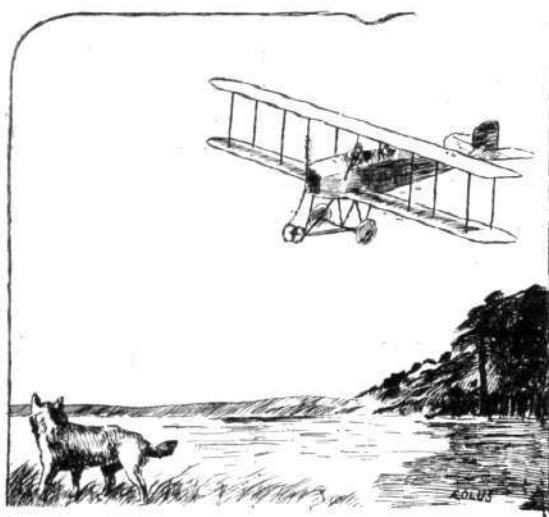
THE DAILY EXPRESS correspondent at The Hague reported the other day that the Dutch General Headquarters had prohibited newspaper correspondents from transmitting by telegraph any information concerning the passage of airships or aeroplanes over the Island of Ameland. He added: "Many Zeppelins and Taubes fly over the Dutch isles of the north when going to England, and the Dutch Government thinks it would be inconsistent with neutrality to allow Dutch journalists to transmit information as to their movements."

Italy Gets German Machines.

REPORTS from Rome state that when the German steamer "Bayern" was completely unloaded it was found that the cargo included two aeroplane sheds in sections, four biplanes with wireless telegraphy attachments and 1,000 aeroplane bombs. It may be recalled that the "Bayern," bound for the East, took refuge in Naples last August and was recently seized by Italy.

EDDIES.

HUNTING wild game from an aeroplane is a sport which appears to be in a fair way to become popular with our cousins on the other side. The hilly country near Rosco, California, has been the scene recently of several hunting parties of this description, the sharpshooter being Fred Mills and the man at the wheel the well-known California pilot Glenn Martin. The plane used was one of the Martin tractor biplanes. Circling round over the surrounding country in wide circles at a height of 3,000 ft., Mills studied the ground below through his field glasses, and soon discovered a prowling coyote and his mate stalking a covey of quail. Shutting off the engine, the party glided down to within a hundred yards of the unsuspecting coyote, the



machine was brought to an even keel, and Mills, leaning out of his cockpit and steadying himself against one of the inner plane struts, struck the animal down with a well directed shot. A similar fate overtook the other coyote. While the aviators were walking about picking up the dead animals a third unwisely approached within range and was promptly added to the bag. It appears that so noiseless had been the approach of the hunting party coming down in a glide with the engine cut off that the animals in the nearest vicinity of the landing place had heard nothing, and before starting for home the hunters were able to shoot a couple of bobcats, which were loaded on board with the rest of the game. In America when they are out for sport they are out some.

4,000 ft., away up, in six minutes is pretty good going, and a performance that not every machine can equal. The lessons learned in the present war all point to the desirability of climbing capabilities, and when, as in the Grahame-White 100 h.p. tractor biplane, on which the above-mentioned performance was put up, the machine possesses a horizontal speed of somewhere in the neighbourhood of 90 m.p.h. and has the further advantage of affording a particularly unrestricted view from both pilot's and passenger's seat, it would be difficult to imagine a biplane of the tractor type more suitable for military purposes. As regards the actual feat of getting up to 4,000 ft. in 6 mins., it was accomplished by Mr. Manton recently, when accompanied by a passenger. He flew in wide circles, climbing steadily, without at any time forcing the machine. In fact Manton feels confident that by pushing the biplane to the utmost he will be able

to improve this figure very considerably. Whether in some future test an attempt is made to better the figures as regards time, with the same amount of fuel, or whether it is made with a full supply of petrol for four hours' flying, the same elevation being attained, the result must be highly gratifying to designer as well as the constructors.

Paying a short visit to the L. and P. school at Hendon the other day I found Mr. H. James, who was up to quite recently attached to the Hall school as instructor, busy tuning up and putting the finishing touches to one of the L. and P. biplanes. On enquiry I learned that James has transferred his activities to this establishment, which is now thoroughly well equipped with instructors, whilst his brother, Mr. J. H. James, still remains with the Hall Aviation Co.

After numerous delays, due to pressure of work in other directions, the new 40 h.p. Beatty engine has now been finished and will, all being well, be tested on one of the Beatty 'buses during the present week. Of the departures from the original design the most important are, as was pointed out in "Eddies" some little time ago, mechanically operated inlet valves and a split crank case. At the same time preparations are being made for a thorough test of the Roberts two-stroke engine, which may have to be somewhat altered before being suitable for air work, especially as regards the lubricating system of the main bearings, which at present takes the form of six grease caps mounted on the side of the crank case. Work is also progressing rapidly on two more Wright biplanes, which, judging from an inspection of some of the finished component parts, will be a vast improvement on previous models, both in construction and workmanship. Then there is the little 35 tractor biplane, some of the parts for which are now being turned out. This latter machine promises to be something quite out of the ordinary, and its appearance and first performances will, therefore, be awaited with interest. The variety of machines that will within the next few months be at the disposal of the pupils may be realised when it is remembered that it will include the older type Wright biplane, the newer type Beatty-Wrights, Caudron biplanes of 35 and 45 h.p., the little Beatty tractor, and possibly a Wright-fuselage biplane.

While having a chat to Baumann and Virgilio at the Ruffy-Baumann sheds one day last week, I was a little surprised to see Mr. Ruffy jumping off his Indian motor cycle in a manner not at all usual for this member of the R. and B. firm and walking somewhat stiffly towards me. His unusual gait at once conjured up visions of an aeroplane smash, with its attendant displays of flying bits of propellers, broken struts and tangles of wire. But it turned out to have been nothing worse than a nasty side-slip on the motor cycle, leaving Ruffy minus some of his fabric covering and with a somewhat damaged chassis. However, he is now getting on quite well, and in fact later in the day I saw him going for a spin with Baumann in the Caudron, just by way of recreation.

To the long list of pilots that Australia has given us, including such names as Harrison, Hawker, Busteed and Pickles, must now be added another—that of Mr. C. W. Snook, of Sydney, who obtained his *brevet* at the Hall school at Hendon last week. Mr. Snook, who has been

interested in aviation for a number of years, but has not until recently been able to take up practical flying, has only been at the Hall school for six weeks, during three of which the weather was too bad for any flying. I am told by the observers that he took a very good ticket, doing each set of the figures of eight in seven minutes, and climbing during the second part of the test to an altitude of a thousand feet. Mr. Snook now intends to try for the Royal Flying Corps, and one hopes that he will prove as successful at the control lever as have the above-mentioned of his compatriots.

x x x

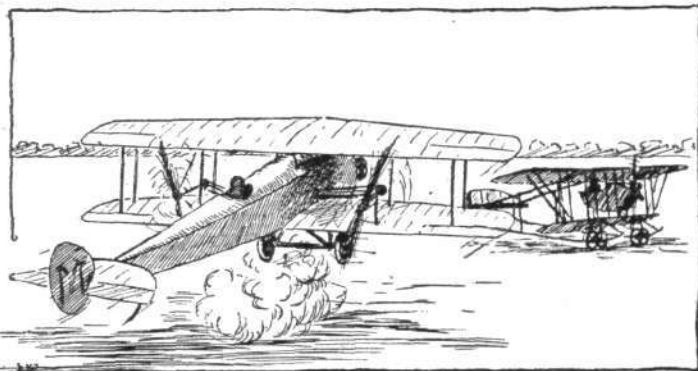
Work is progressing rapidly on the extension of the British Caudron works in Cricklewood Broadway, and it should not be very long before they are available for the erection of some of the new machines in course of construction, for which there is at present no room in the older shops. The capacity will then be more commensurate with the demand for these excellent machines, and the Services will benefit from the increase in output that will then be possible.

x x x

Last Saturday and Sunday saw further trials with the Mann twin pusher biplane, which, as I mentioned last week, has been fitted with a 125 h.p. Anzani engine. Although these preliminary trials were brought to a temporary conclusion by a mishap, which at the time was certainly alarming, it appears to me to be a case of "out of evil cometh good," for the designers have had an early opportunity of confounding, graphically, certain criticisms on this type of machine. I need not dwell on the accident itself, as this is described elsewhere, but it must be pointed out that the breaking of one of the propellers in the air not only caused but little damage to the machine and none to the pilot, but the stability was only slightly affected in spite of the fact that at the time of the breakage the pilot had the machine in a critical position, i.e., on a sharply banked turn.

x x x

The Mann biplane was responsible for another little incident on the Saturday evening, which demonstrated its controllability. Ding, whilst making a fairly steep descent into the aerodrome with the engine throttle down, found he was flying straight into another machine taxiing on the ground. The only possible way of avoiding a nasty collision was by opening out the engine and jumping the machine, but as the distance separating the machines was only a matter of fifty yards or so when the descending biplane had almost touched the ground things



looked pretty mixed up. The manoeuvre proved entirely successful, however, for the Mann literally sprang into the air over the other biplane in a manner that dispelled, once and for all, the belief held by some that this 'bus is nose heavy, etc.

One important factor governing both these incidents which stands out pre-eminent is the magnificent pilotage of W. Rowland Ding. The manner of his flying the B.E.2c. at Hendon, to which I referred recently, confirmed my opinion of him as a first-class pilot. His presence of mind in what looked like providing the nucleus of a nasty accident proves him also one of prompt and decisive action in an emergency.

"ÆOLUS."

★ ★ ★ ★

Queen Alexandra Presents Overseas Aeroplanes.

ON Saturday last H.M. Queen Alexandra visited the Royal Aircraft Factory, and formally presented to the R.F.C. five of the aeroplanes recently subscribed for under the Overseas Club's scheme.

Queen Alexandra, who was accompanied by Princess Victoria and attended by the Countess of Antrim, General Sir Dighton Probyn, V.C., and Colonel Henry Streatfeild was received by Mr. Bulkeley Evans, chairman, and other members of the committee of the Overseas Club, including Messrs. E. R. Peacock, W. Maxwell Lyte, Howard d'Egville, and Evelyn Wrench, secretary. Mr. Steel Maitland, M.P., Under-Secretary of State for the Colonies, represented Mr. Bonar Law. Col. Fulton, the chief inspector A.I.D. was also present.

Queen Alexandra, in making the presentation, said:—

"It gives me the greatest pleasure to christen these aeroplanes given by the Overseas Dominions.

"I give them my blessing, and wish them every success and good luck."

The machines, which were of the latest B.E. 2c type built by the Bristol Co., were accepted on behalf of the War Office by Col. Brancker, the Deputy Director of Military Aeronautics, and after the pilots had been presented to her Majesty the machines started on a flight with it is understood France as the destination.



Queen Alexandra on Saturday made the formal presentation at Farnborough of a batch of aeroplanes presented by the Overseas Club to the Royal Flying Corps. Our photograph shows Her Majesty wishing good luck to the flying officers before their start for France with the machines which Queen Alexandra had formally handed over for their use.

ADVISORY COMMITTEE FOR AERONAUTICS.

REPORT FOR THE YEAR 1914-15.

LAST week we gave a short *résumé* of the chief work embodied in the Advisory Committee's report for 1914-15, which is formally addressed to the Right Honourable H. H. Asquith, M.P., as First Lord of the Treasury, by Lord Rayleigh, as president. The following is the full text of the report:—

The work of the Advisory Committee for Aeronautics has been continued during the past year on the same lines as previously.

During the absence of Major-General Sir David Henderson on active service, Colonel Brancker, Deputy Director of Military Aeronautics, has acted as the representative of the War Office on the Committee.

Continued progress has been made during the year in the consideration of the conditions affecting the stability of the aeroplane. The exact knowledge furnished by these investigations relative to stability has led to definite improvements in safety and ease of handling without loss of speed and efficiency. It is satisfactory to learn from the reports of officers in the field that this work has resulted in advantages which are appreciated by our fliers.

A large amount of attention has also been given during the past year to improvements in the aeroplane in detail, both from the aerodynamic and constructional points of view.

Under the circumstances at present existing, it has not been thought necessary in this report to describe so fully as in previous years the nature of the investigations carried out, and of the conclusions reached. A detailed account of the work done is in preparation.

Equipment for experimental work at the National Physical Laboratory.—Important additions have been made to the equipment for experimental work at the National Physical Laboratory. The large air channel, 7 ft. square in section, has been completed, and is now in use. In this an air speed of 65 ft. per sec. can be reached, with a consumption of about 60 horse-power. The balance for the measurement of the forces and moments on the models tested was constructed by the laboratory staff, and the accuracy with which the observations can be made has been found satisfactory. Three air channels are now available for investigations on models, and provision has been made for the necessary increase in the staff to enable advantage to be taken of the facilities thus afforded. The volume of work to be carried out continues to grow, and all the channels are at present in practically continuous use.

In connection with the researches on light alloys, and the investigation of improvements in the methods of mechanical treatment employed in their manufacture in the forms required for practical purposes, a sum was included in the estimates for 1914-15 for the provision of a rolling mill at the National Physical Laboratory, to enable the practical working of light alloys to be studied under suitable conditions. The necessary buildings and apparatus have now been erected, and the work has commenced. It is hoped that by the opportunities thus afforded, the practical importance of variations in the conditions attendant on manufacture can be more closely examined, and that results of very general value may be attained.

A number of smaller items of equipment have been provided. The more important of these are an apparatus for tests of air-screws in the wind channels, new gear and attachments for tests of seaplane floats in the William Froude National Tank, and apparatus for strength tests of large samples of aeroplane and airship fabric. The equipment generally has been maintained in good order.

Air channels.—The work done in the air channels has included tests on models of airships, and airship appendages, aeroplane wings, bodies, fins and rudders, tail planes and elevators, struts, wires, and other aeroplane parts, and on models of complete aeroplanes. As previously, a large amount of this work has been carried out in response to requests received from the Admiralty and the War Office, to supply information needed for constructional purposes, and for improvements in the design of machines. At the same time systematic research has been continued with a view to securing increased aerodynamic efficiency in all parts.

The investigation relating to the stability of the aeroplane, which has been a prominent feature of the work of the National Physical Laboratory, has been continued and extended. The previous work related to the effect of disturbances from steady rectilinear motion. The case of steady curvilinear motion, *i.e.*, of a machine effecting a turn, whether moving in a horizontal plane, or in a spiral path, has now been considered. The analysis involves the solution of algebraic equations of the 8th degree, and the methods applicable to the solution of such equations have been developed with a view to the reduction of the labour involved. The machinery thus provided will, it is hoped, be of assistance to other workers on the subject. Interesting results have been obtained as to the influence of turning on the longitudinal stability, and on the tendency to the form of instability known as the "spiral dive." Some of the

experiments on complete models in the air channels have been directed to obtaining data required in connection with these investigations relating to stability, and for the design of the controls. †

Air-screws.—A research relative to certain questions in connection with air-screws was completed early in the year, the tests being made in one of the air channels with apparatus specially designed for the purpose. Further tests on air-screws have been made on the whirling arm, both for the Admiralty and for the War Office. These tests have brought out points of interest and importance, and experiments are proposed with a view to the improvement of the methods of calculation applicable to air-screws, and to securing a means of predicting more accurately the performance of an air-screw under various conditions of use. This question has been dealt with by a member of the committee from a theoretical standpoint in some recent papers.

Strength of construction.—In continuation of the enquiry conducted earlier into questions connected with the strength of construction of aeroplanes, methods have been devised for the calculation of the stresses in the wings and bracing of aeroplanes, and have been applied to the determination of the stresses occurring in special types of machine. The methods of calculation applicable to more rigid structures require appreciable modification in relation to so flexible and elastic a structure as that of an aeroplane, and the method of "strain energy" has been developed and applied for this purpose. It is hoped that the results of this work will be of assistance to designers.

Reports relative to the strength of machines have been presented to the Admiralty and the War Office, and recommendations have been made with a view to securing, wherever possible, increased strength in the construction of aeroplanes.

At the request of the Superintendent of the Royal Aircraft Factory, experiments have been made on the fatigue strength of stranded cables, passing over pulleys of relatively small diameter.

By desire of the War Office an investigation has been undertaken with regard to autogenous welding, and the precautions to be observed in relation to its employment in the manufacture of aeroplane parts.

Fatigue tests of a wing spar which have been in progress over a considerable period have recently been completed.

Investigation of breakages.—During the past year a large number of cases of fracture of aeroplane parts, especially of parts of engines, have again been investigated at the request of the Admiralty and of the War Office. The importance and value of this work is considerable. It has led in many cases to suggestions for improvements in design which have been brought to the attention of manufacturers, and has in some instances revealed undesirable variations in the composition of the materials employed in manufacture. The continuation of this work thus tends uniformly towards the elimination of defects of design and towards improvement in the strength and reliability of the materials employed.

Seaplane floats.—Tests have been continued in the William Froude National Tank on models of floats for seaplanes, and improvements have been made in the methods of test and the apparatus employed. Useful information has been obtained from experiments carried out by the Admiralty on machines fitted with floats designed in accordance with the results obtained in the model tests, and the report made to the Committee by the officer who carried out these experiments emphasizes the value of the investigations made in the tank. Provision has been made for the continuation of the work in the current year.

Fabrics.—An increased volume of work has been dealt with relating to airship and aeroplane fabrics, methods of proofing, dopes, &c. New apparatus has been constructed for carrying out strength tests on larger specimens of fabric, and for reproducing in the laboratory the conditions of weathering tests. In accordance with arrangements to which reference was made in last year's report, special attention has been given to a number of questions relating to the strength required in aeroplane fabrics, especially under the conditions of service and exposure. The stresses which may occur in the fabric on the wings of aeroplanes under various conditions have been more fully investigated, and a series of bursting tests on aeroplane fabrics has been carried out for comparison with the results obtained from tensile tests. The Committee desire to thank Mr. T. Jackson Greeves, of the Portadown Weaving Company, Ltd., for assistance rendered in connection with these tests.

The investigation which was undertaken with a view to deciding upon standard conditions to be observed in tests of fabrics, especially undoped fabrics, has now been completed, and it has been possible to specify conditions for the contractual testing of aeroplane fabrics which conduce to increased rapidity of test and greater uniformity in the results obtained. These conditions have been adopted as standard for the purpose of War Office specifications.

Other matters.—Among other matters which have been under consideration by the Committee may be mentioned the question of sighting appliances for use on aeroplanes, and accuracy in bomb-dropping. A number of special investigations have been undertaken for the Admiralty and the War Office, including the analysis and examination of deposits on airship envelopes, and tests of magnetos forming part of wireless installations to determine their liability to ignite explosive mixtures of gases.

A report on Gyroscopic Theory has been prepared by Sir G. Greenhill, as stated in the previous report, and was issued in December last as a Stationery Office publication.

Full Scale Work at the Royal Aircraft Factory.—The investigations undertaken during the year at the Royal Aircraft Factory with a view to the design of new or modified types of aeroplanes, and the improvement of existing types, have necessarily been closely related to military requirements. The importance of the research carried out on the full scale machine is, however, so great that there has been no relaxation but rather an increase of effort in the continuance of the investigatory work with the aid of which the conclusions drawn from the model tests are applied and adapted to practice. In particular, as already indicated, the value of the theoretical study of the conditions affecting stability, and the experiments on models in the wind channels associated therewith, has been fully tested and demonstrated in its application to the full scale aeroplane, and much has been done in extending the knowledge derived from the work on models, and in determining the manner in which the information obtained can be most fully utilised in the design of the numerous aeroplane types now employed.

Strength of construction.—The reports received from the Expeditionary Force have clearly indicated the advantage of attention to strength and good construction in all details of the aeroplane, and the superiority in durability and useful life thereby attained. It is felt that the results thus achieved fully justify the care which has been devoted to these matters and the special precautions taken.

In all machines now designed the recommendations made by the Committee are closely followed, and the margin of strength allowed for exceeds that specified as required from considerations connected with the effect of flattening out after a steep dive. The increase in weight due to the modifications made has to some extent been compensated by other improvements and by increased aerodynamic efficiency. In military use further increase in strength has to be considered in relation to other factors affecting safety; in particular the merit of rapid climbing tends to safety of a different kind, to which great consideration must be given, and limits the increase in strength and weight which might otherwise be adjudged desirable.

In accordance with suggestions put forward in reports made by the Committee to the War Office, the use of autogenous welding has been dispensed with in parts under stress. Many other matters of detail in design and construction as affecting strength have also received attention.

Design and construction of machines.—The modifications required to conform with the considerations arising, as explained above, in connection with stability and strength of construction, have led to the complete re-design of certain existing types of machine, involving alterations to wings, body, tail, fin area, wires and controls. Tests of the new designs have shown that it is possible, without sacrifice of controllability, to make the aeroplane inherently stable and capable of flying satisfactorily without use of the controls. Improvements have been introduced in the shape of the body and engine covering, in tank capacity, in the section and attachments of wires, and in many other ways. Experiments on alighting gear have been continued, and two standard types adopted as suited to special requirements. New types of machines have been designed embodying special features which recent military experience has shown to be desirable. In all of these it has been found possible to secure stability under ordinary flight conditions.

Wireless and other signalling apparatus has been designed, and bomb-dropping gear has been fitted and investigated. In these matters assistance and advice has been given by individual members of the Committee.

Engines.—Experiments with engines have been continued, and four types of engine for different purposes have been designed, and are being produced by various manufacturers for use in standard aeroplanes. Much work has also been carried out in conjunction with makers of other types of engine in this country, and the experience gained in the testing and repair of engines used on service machines has thus been rendered of material assistance in the improvement in detail of existing types. Additional engine testing plant has been installed, and arrangements made for running extended tests; information derived from such tests has already resulted in increased reliability.

Instruments.—Increased accommodation has been provided for the instrument department. The work of the factory in this respect involves a considerable amount of routine testing of instruments for use on aeroplanes, which can now be dealt with more rapidly.

Improvements have been made in the standardization of dimensions and methods of attachment of instruments, so that those of different makers can be readily attached to standard instrument boards or supporting panels. Attention has been given to the clear marking and to the lighting of instruments, and a dashboard lighting set has been produced. A thorough investigation has been made into the sources of compass error on the aeroplane, and a full report on the work has been presented to the Committee. This matter has been under consideration by the Committee on several occasions, and members of the Committee have rendered much assistance in dealing with the difficulties which have been found to occur.

Whirling arm.—The dynamometer and recording instruments for tests of full-sized air-screws on the whirling arm have now been fitted, and tests have been in progress. Owing to shortage in the power supply it is not yet possible to obtain full speed conditions, but with some air-screws forward speeds of 50 to 55 m.p.h. have been reached, corresponding with the climbing speeds of certain aeroplanes. It is hoped shortly to increase the speed attainable.

Wind channel.—The wind channel which was installed at the Royal Aircraft Factory over seven years ago has recently been greatly improved on the lines indicated by the experience gained at the National Physical Laboratory, and by the courtesy of the Laboratory a balance is being provided similar to that employed in the 3-ft. channel at Teddington. With the aid of this channel it will be possible to carry out preliminary tests which will enable the enquiries and requests for detailed investigations addressed to the Committee to be presented in a more complete and useful form. It is hoped that this may assist in relieving the Laboratory from some of the less general questions constantly arising, and leave it somewhat more free to continue researches planned on broader lines, thus tending to expedite the work and to facilitate progress both at the factory and at the laboratory.

Naval Work.—As in previous years close co-operation has been maintained between the experimental department at Teddington and the Air Department of the Admiralty. The Committee is indebted to the Air Department for assistance rendered and information furnished with regard to matters connected with the work on airships and aeroplanes, in relation to the experimental investigations carried out on models. Valuable information has been afforded by the full-scale tests, already referred to, carried out by the Air Department with floats made to the design based on the experiments in the William Froude National Tank. The laboratory has also received much assistance from the Admiralty in connection with the tests of airship and aeroplane fabrics.

The Committee has received from the Air Department a large number of requests for investigations involving experimental work at the Laboratory, among which may be mentioned tests of aeroplane and airship models, the determination of the air pressure on airship sheds, tests of wind screens, investigations relative to fabrics, and to the material and design of parts of aeroplanes and of engines. In July, by invitation of the Air Department, the Committee visited some of the Naval Air Stations, when opportunity was afforded of inspecting the naval airships, aeroplanes and seaplanes, and of examining into certain questions on machines in flight.

Meteorological Work.—At the end of 1913 the experimental work in meteorology was moved from Pyrtown Hill to new quarters in the Royal Aircraft Factory at South Farnborough. The Meteorological Office at South Farnborough is administered as a branch of the office at South Kensington. The establishment of the new office engaged the attention of the staff during the early part of the year under review. This involved the organisation of an observing station for obtaining continuous records of pressure, temperature, humidity, rainfall and sunshine, with regular observations for the purpose of control, of frequent observations of air currents at different levels by means of pilot balloons, and of arrangements for the supply of charts, forecasts and other information to the Aircraft Factory, and to the naval and military wings quartered at South Farnborough.

With one notable exception, that of the provision of an anemograph at the office itself for the important purpose of enabling the meteorologist-in-charge to watch the changes in the direction and force of the wind, all these points had been attended to by July last, and the Superintendent of the Royal Aircraft Factory had given facilities for the use of records from an anemograph on the golf course about half a mile distant from the office. An understanding had also been arrived at with the Commandant at Upavon for the reciprocal checking by the meteorologist at each station of the special aircraft forecasts issued by the other. The results of this checking show that so far as wind is concerned the forecasting is good. This organisation, which was an essential preliminary to effective experimental work, was barely completed when the outbreak of war made it necessary for the staff to turn their attention to helping the central office in meeting the special war requirements of the air services. Further progress with the experimental work in meteorology has thus, for a time, been unavoidably postponed.

AIRCRAFT AND THE WAR.

Writing from Berne on 29th ult. a MORNING POST correspondent said:—

"Apparently the airmen of all the belligerents experience great difficulty in entirely avoiding Swiss territory, for on Sunday last a Taube, attempting to drop bombs on Delle Station, flew over a portion of Switzerland, dropping his bombs on a farm about six hundred yards from the Swiss frontier. Only slight damage was caused."

In the "wireless" news sent out from Berlin on the 2nd there was the following:—

"Flight-Lieutenant von Gotha has performed a great feat. After the capture of Lemberg he obtained three days' furlough, mounted his machine, and flew directly home to land on his father's estates in Scopeau, near Halle. Two days later he returned to Lemberg in the same way."

The DAILY MAIL correspondent in the North of France sent the following on the 2nd inst.:—

"How a British airman, Lieutenant Mark Nelsen, piloting a French biplane, brought down a German Aviatik biplane while 6,500 ft. over Ypres is told in to-day's PETIT PARISIEN.

"The following is the airman's story:—'I left the aerodrome at 3 a.m. and made off for Ypres. I was flying over that town at a height of 6,500 ft. when my observer saw an Aviatik in the distance. The German saw us and flew off. In about ten minutes I was flying above him. My observer fired his machine-gun, but only hit the planes. The German replied, and a bullet struck only four inches from our petrol tank. I then, as a stratagem, caused my machine to fall nearly at right angles. The German, thinking I was done for, shut off his ignition and started volplaning to the ground, but I righted myself about 600 ft. from earth and rose above the enemy."

"As we passed my observer fired a couple of rifle shots. The first bullet struck the German in the arm, but he continued to pilot his machine. The second bullet hit the petrol tank. The Aviatik burst into flame and fell. Both the occupants were killed."

The ECHO BELGE on the 2nd inst. reported that a Zeppelin airship exploded on the Wednesday previous as it was leaving its shed at Brussels. The cause of the explosion and the number of casualties were unknown.

The DAILY MAIL correspondent in Paris sent the following on Saturday:—

"Flight-Lieutenant Juillerot had a remarkable escape from death at a place near Mantes to-day. Having left Buc in a Henri Farman biplane for Dunkirk, he was at a height of 6,000 ft. when the main wire caught in the propeller and snapped.

"M. Juillerot was then over Mantes, a most difficult country, hills, orchard walls, and market gardens offering a nasty prospect for a hurried descent. He planed down at seventy miles an hour in circles looking for a likely landing place. The only field he could see was surrounded by telegraph wires.

"Sweeping down to within a few feet of the ground he dived under the telegraph wire and rose again. To have landed at such a speed would have been fatal. At the other end of the field was a row of trees in which the machine eventually landed and was smashed to pieces. M. Juillerot escaped unhurt, but was badly shaken."

A Reuter message from Paris on Sunday stated:—

"A telegram from Remiremont states that a Taube which attempted to fly over Remiremont this morning was fired on and driven off in the direction of the Upper Saone."

Mr. Percival Phillips, writing to the DAILY EXPRESS from the Belgian Frontier on July 4th, said:—

"A number of German soldiers who were working at the railway station of Staden, which is the German ammunition supply base for the Yser front, were killed and wounded by bombs dropped by the Allies' airmen. Damage was also done at Langemarck."

In the Berlin *communiqué* on Sunday it was stated:—

"Our aviators yesterday were very active. German aircraft dropped bombs on the Landguard Fort of Harwich and upon an English flotilla of destroyers. They also attacked the fortified railway works of Nancy and Dombasle, and the barrier fort of Remiremont. A German battle aeroplane forced a French aviator near Schbucht to land. The enemy dropped bombs at Bruges without doing military damage."

A Reuter message from Petrograd on July 4th said:—

"Messages have been dropped from German aeroplanes informing the inhabitants of Warsaw that the town will be in the possession of the Germans within a month."

Writing from Petrograd on Monday, the DAILY TELEGRAPH correspondent said:—

"Details have only just become known of the brilliant achievement of one of the Russian aeroplanes of the Ilya Murometz type, which was carried out on June 27th. This eagle of flying machines made a four-hour flight over the district of the river San, during which it flung three bombs into the enemy's transport at Lezajsk and eight into the station at Przhevorsk. Over the latter town the machine remained for fifteen minutes, and described four circles.

"The projectiles dropped varied in weight between one and five poods. In the station stood five heavy trains, one of which was struck and took fire. The flames spread very rapidly, and before the aeroplane left an area of several square versts was enveloped in clouds of smoke. It was admitted by the German press that a bomb struck a trainload of artillery ammunition, and it is believed that at least 30,000 charges must have been destroyed.

"In addition to that, railway communication in the enemy's rear must have been seriously disorganised for a considerable time. The machine was in charge of Lieutenant Bashko, who had with him Lieutenant Smienoff, Artillery Captain Naumoff, and Mechanic Shkudoff. The Russians claim that greater accuracy of aim in bomb-throwing can be obtained from the Ilya Murometz than from any other type of machine."

The DAILY MAIL correspondent at Rotterdam, writing on Sunday, said:—

"Rolling stock at Langemarck Station, north-east of Ypres, has been destroyed by bombs dropped by Allied airmen.

"Two Zeppelins have passed to the north of Holland, coming west."

Mr. E. Alexander Powell, writing in the DAILY MAIL on Monday regarding the portion of Alsace now occupied by the French forces, said:—

"The inhabitants of these Alsatian towns have become so accustomed to aeroplane bombardments that they think no more of them than they do of thunderstorms, going indoors to avoid the bombs just as they would go indoors to avoid the rain. They told me at Remiremont, where I spent several nights, that a Taube had dropped bombs on the town at daybreak every morning for a week running, and when it failed to show up during my visit the proprietor of the hotel where I was staying was as much annoyed as though he had failed to receive his milk or his morning paper. As I motored through the country I noticed that nearly every town through which we passed showed evidences, by shattered roofs or shell-torn walls, of aerial bombardment."

The DAILY TELEGRAPH correspondent at Athens on Monday telegraphed:—

"A British aeroplane recently threw bombs on the forts at Vurla. No great damage was done. Bombs were thrown upon Smyrna also, and three soldiers were killed."

The GIORNALE d'ITALIA, discussing the position of Rome in view of a possible attack by Austrian airships, thinks that the capital must consider itself practically safe because the distance from Pola or Zara is about 235 miles and from the Island of Lissa 213 miles, while the Austrian airships cannot travel more than 315 miles, which is insufficient for the return journey.

In the "wireless" news sent out from Berlin on Monday there was the following:—

"Our airmen once more proved their superiority in an aerial battle north and west of Manonviller. A French flying machine was forced to make a hasty landing both on Thursday and Friday.

"A German battle airman successfully repulsed the attacks of three opponents yesterday and the day before yesterday.

"The bombs dropped during the enemy air attack on Bruges reported yesterday fell in the neighbourhood of the most valuable works of art."

Writing to the DAILY TELEGRAPH from Milan on Tuesday, Mr. A. Beaumont said:—

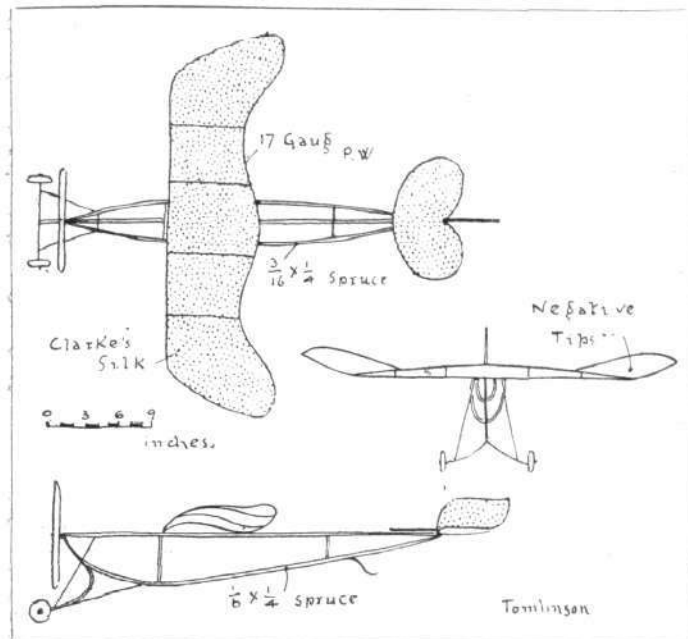
"At the same time an Italian dirigible made a successful attack on the enemy's line of communications at the rear by dropping high explosives on the Dornberg-Prebacina junction, which was the only direct line of communication with Trieste enjoyed by the fortifications of Gorizia, damaging the rails at the above junction and the station buildings at Prefacina. Another attack by an Italian dirigible was made on the technical establishments of Trieste, where considerable quantities of war material are prepared, and according to the official report the establishment was seriously damaged. The Italian dirigible in both instances returned safely to its base."

Models

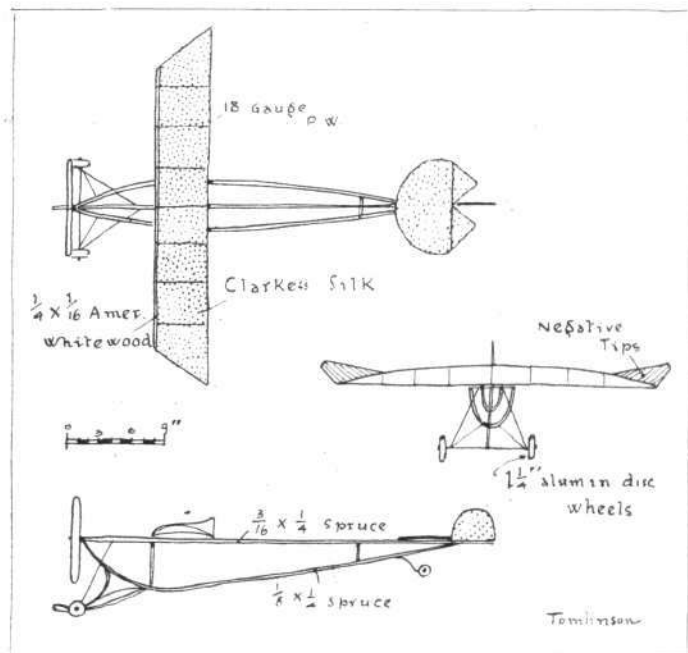
Two Tractor Monoplanes. By H. TOMLINSON.

"I ENCLOSE herewith drawings of two 'tractor' monoplanes which I hope will be of use to you:—

"Power, 12 strand, $\frac{1}{16}$ strip; do. Screw, 'Star' 9 in. carved; do. Weigh, 6 ozs.; $5\frac{1}{2}$ ozs. Distance off ground, 200 yards; 150



Mr. H. Tomlinson's tractor mono. model No. 44.



Mr. H. Tomlinson's tractor mono. model No. 51.

yards. Number of turns, 500; 500. Speed, approximate, 10 m.p.h.; 12 m.p.h. Average height, 40 feet; 30 feet. Gliding angle, 1 in 6; 1 in 8. Duration, 38 secs.; 30 secs."

Pressure-Type Anemometers.

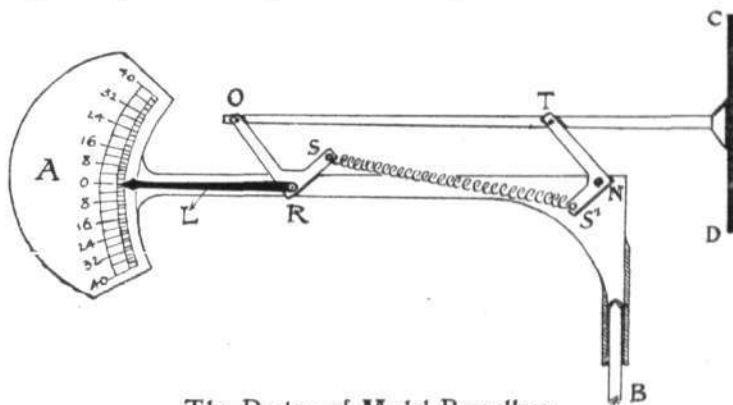
Reply to Query.

Pressure Anemometer
(after Maxim).

(Formula: $P = .003 A \cdot V^2$).

The diagram shows a form of (spring) Pressure Anemometer invented by Sir Hiram Maxim. A, is a weather vane and recorder;

L, a pointer; SS', a spiral spring; R O T N, a system of parallel levers working on pivots, R, O, T, N; B, a vertical axis on which the whole rotates; and C D, the plate or disc of known area; the apparatus is supposed to be graduated so as to read pressure in pounds; it could of course be so arranged to read (say) up to 30 lbs. in oz. like a Salter's spring balance. In a spiral spring the extension is proportional to the pulling force provided the extension be not too large. Such an apparatus is therefore of a very simple constructional character and easy to use; unfortunately, however, anemometers of this kind have not a very wide range—and as recorders of wind velocities are practically useless in a wind of less than 8 to 10 miles an hour. As the indications of the rotary, vane, windmill or screw type the indications of the pressure plate depend more or less upon the character of the vane used to keep it normal to the wind, which, "for the best result, should be light, of moderate length, and with the plates composing it rather widely separated in order to avoid as much as possible eddies caused by the pressure plate itself." [S. P. FERGUSON.]



The Design of Model Propellers.

Mr. F. J. Cann, the secretary of the Windsor Aero Club, writes the following interesting notes on propellers:—

"I do not think any of our members conform to the usual practice of making the pitch one and a half times the diameter (for single-screw models). Indeed, most of us use propellers of almost as coarse a pitch as one used on canard twin-screws, and yet neither of our single-screw models suffer from torque. A suitable disposition of the rudder has much to do with this question. Many beginners undoubtedly fit too small propellers both as regards diameter and pitch, and consequently have trouble with adjustment to the centre of pressure; I myself have seen some models dive vertically after the thrust has ceased, resulting from propellers which 'scream.'

"In the design of a propeller it is undoubtedly convenient to view it as an aerofoil secured about a central axis, the 'lift' of it corresponding to the thrust, and using the air as a nut or fulcrum with which to screw itself forward.

"Carved propellers are used entirely by members. The bentwood may gain a point where weight is concerned, but with regard to efficiency our results show them to be inferior to carved ones; apart from which it is impossible to design a bentwood to the same extent as one cut from the solid.

"The writer's formula for calculating the pitch of a propeller may be found useful. It is $P = \pi d \tan A$, where P = pitch, $\pi = 3\frac{1}{2}$, d = diameter, A = tip angle, $\tan A$ = a constant. Thus, assuming a propeller to be of 10 in. diameter, and 30° tip angle, we have

$$P = 3\frac{1}{2} \times 10 \times \tan 30$$

$$P = 3.1416 \times 10 \times .5774 = 18.14 \text{ approx.}$$

The Farnham Aviation Club.

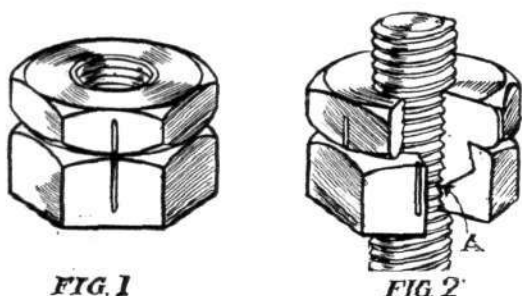
Mr. G. P. Gifford, the secretary of the above, writes from "Conewood," Farnham Common, Bucks, that residents and visitors in this district, which embraces Slough, Windsor, Gerard's Cross, and Beaconsfield, may be interested to know that the club has been formed for the study of aeronautics. It is proposed to confine work to building models with a view to the subsequent building of full-sized machines, and the possibility of such improvements in design as are particularly desirable in the present state of war. Those interested can obtain further particulars as to the conditions of membership from the secretary as above.

THE VISLOK SAFETY LOCK-NUT.

IN connection with the innumerable nuts used on a modern aeroplane there is no need to dilate upon the supreme importance of ensuring that each and all of these shall be able to give security against slacking off under the influence of vibration or those other causes that are ordinarily responsible. On all machinery the simple nut is, in spite of its apparent comparative insignificance, a most vital detail; on an aeroplane its responsibility is infinite.

Many devices to secure the locking of nuts have been put on the market, but, generally speaking, they have failed to come up to expectations. There is, however, one device which has proved its merits in everyday use, as is shown not only by the testimonials from well-known motor manufacturers and other makers of machinery subjected to great vibration, but by repeat orders, while it is being specified by the Admiralty for use in certain instances. The device to which we refer is the Vislok, which is perfectly simple in design and action. It needs no special tools for its operation, there is no special preparation of the bolt, the threads are undamaged, the nut can be locked in any position on the bolt, and there are no loose detail parts which are liable to be mislaid.

From our sketches it will be seen that when in position on the bolt the Vislok nut precisely resembles two separate nuts superimposed, the one acting as a check to the other in the usual manner. Though its action is to a certain extent similar to such two nuts, it



The "Vislok" safety lock-nut, showing its appearance, construction and action.

is, as a matter of fact, a single unit, though comprised of two sections hydraulically pressed together in a way that reference to our second sketch will make clear. To engage with the bolt, the two indicating lines are brought into register with one another—the internal thread will then be continuous throughout the two sections—and the whole may be screwed into place as one nut. When tight home the upper section is given a turn with the spanner independently, as shown in Fig. 2. To remove from the bolt the procedure is reversed, the top section being turned till the indicating marks coincide and then the unit being removed as one nut.

As regards its locking principle, this, as we have already said, is in part analogous to the ordinary nut and check nut combination, but in greater part to other causes. The usual nut and check nut, when locked as they should be—and that way is to tighten the first as far as it will go, and, having screwed down the second nut upon it, to give the first nut a backward jerk whilst the second nut is securely held with a spanner—depends for its action upon the fact that all back-lash in the system is eradicated. Similarly, with the Vislok, the partial turn to the upper section destroys back-lash by forcing more of the bottom thread on that section into its corresponding groove on the bolt, as shown at A in Fig. 2, until the whole of the groove is occupied, and vertical movement therefore is impossible.

These nuts are made in Whitworth and Fine (Motor) standards and in practically all sizes. For purposes of a practical test, Messrs. Vislok, Ltd., the manufacturers, whose address is 3, St. Bride's House, Salisbury Square, London, E.C., are prepared to send, free of charge, a reasonable number to any responsible applicant. Our advice is, try them!

The American National Competition Postponed.

It has been decided by the Aero Club of America to postpone the National Aeroplane Competition, which was to have been held from July 4th to October 12th, and also the Transcontinental race, the reasons given being the conditions created by the sinking of the "Lusitania," and the possibility of U.S. intervention in Mexico. Another contributory cause is that all the manufacturers are busy on war work for European countries. In the meantime the Aero Club of America is working hard to secure aeroplanes for the National Guard and Naval Militia of the various States.

"£5 for Aeroplanes."

UNDER the above heading the DAILY EXPRESS on Monday last announces that Mr. H. G. Wells has received a £5 note from an anonymous correspondent of that paper, who asks him to devote this sum to any fund that goes to the making of aeroplanes. Mr. Wells writes to the DAILY EXPRESS:—

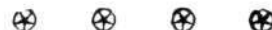
"As there is considerable risk at the present time of competing mischievously against the Government for aeroplane engines if such special funds are started, I have sent the note to the Treasury with a request that it should be paid in to any account that is devoted wholly or partially to aeroplane construction."

Immediately after the above, without any break, is the following:—

"The winged victory may yet have its eternal meaning," writes Mr. Max Pemberton in the SUNDAY PICTORIAL, in reference to the DAILY EXPRESS campaign for 10,000 aeroplanes to shorten the war.

"Remember the loss we suffered at Neuve Chapelle," he states, "and contrast the possibilities. Then we shall discover the vision behind this scheme and the wonderful prospect of victory it unfolds. What is needed is the national decision to embark upon an adventure more reasonable, more imaginative, and more momentous than any yet suggested since war was declared."

It does not emerge whether the subject of the two items is identical or not, but assuming it is, having in mind our comments on the 10,000 aeroplane scheme, it would appear to be a clear case of the mountain and the mouse.



Triplex Glass and Insurance Policies.

SEVERAL times attention has been drawn in these pages to the undoubted value of the use of Triplex glass in connection with aircraft, and now a fact transpires which in every way endorses the favourable views which we have expressed. It appears that the underwriters of the Dreadnought Motor Policies at Lloyd's have decided that in their policies for motor cars they will for the future give a reduction of 10 per cent. off premiums on all private and public hire motor vehicles fitted with Triplex safety glass. Probably no keener appraisers of the values of risks exist than these same underwriters, and their action is therefore indeed a compliment to the Triplex firm. *Verb. sap.*



PUBLICATION RECEIVED.

How to Fly. The Ruffy-Baumann School of Flying, Kendall's Mews, George Street, Portman Square, W.



Aeronautical Patents Published.

Applied for in 1913.

Published July 8th, 1915.

- 23,133. R. WOERNER. Flying machines.
- 23,949. H. VILLARD. Aeroplanes.
- 25,254. G. FISCHER AND M. FISCHER. Safety device against non-authorized handling of engines.

Applied for in 1914.

Published July 8th, 1915.

- 7,122. ALBATROSWERKE GES. Bodies for aeroplanes.

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